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Catherine H. Reheis-Boyd
President

August 31, 2012

Via email and web: http://www.arb.ca.gov/cc/capandtrade/comments.htm

Mr. Steve Cliff
Ms. Mary Jane Coombs
Air Resources Board
1001 I Street,
Sacramento, CA.

Re: Comments on Leakage Study

Dear Mr. Cliff and Ms. Coombs:

The Western States Petroleum Association (WSPA) represents 27 companies that explore for, develop, refine, market and transport petroleum and petroleum products and natural gas. WSPA was in attendance at the Leakage Workshop on July 30 where Staff and retained consultants outlined their proposed approach. At that time, Staff solicited comments on the approach proposed by the California Air Resources (ARB). We are pleased to submit these comments and other, more detailed thoughts in the future as the ARB approach evolves and becomes more complete. We look forward to continuing dialogue on this issue in 2012 and 2013.

We understand that the studies outlined by ARB were intended to serve only as the starting point for a study of leakage as requested by the Governing Board in their Adopting Resolution and to assist in minimizing leakage as required by AB 32. WSPA agrees that the studies outlined at the July 30 workshop are designed to begin framing the issue and that much more detailed investigation is needed to document 1) the extent of leakage that will occur in the future (using forward-looking indices and analysis); 2) the best approaches, including use of historic data, to estimate likely levels of leakage, and 3) how to measure leakage on a going-forward basis.

Because leakage is a complex issue involving numerous sectors of the economy and the fact that it will take time to carefully evaluate its impacts on specific industrial sectors that may be especially vulnerable to leakage, it seems likely that the report will not be completed until later in 2013 or as late as 2014. Leakage may occur due to the existing policies, even while the results of the ARB studies are finalized and before ARB can identify actions that need to be taken. Rather than impose these

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impacts to the economy in the short term, ARB should provide 100% free allowances rather than 90% as currently required. This step would address leakage of California jobs, investment, and emissions while appropriate corrective action is identified and implemented. We previously noted this approach in our letter to you (August 13, 2012) and submitted the BCG report as part of our comments.

Need for Comprehensive Macroeconomic Analysis

It seems clear that a comprehensive study of leakage must be composed of both historic and forward-looking analyses that incorporate both microeconomic analyses reflecting specific facilities and macroeconomic factors that reflect impacts on the larger economy and major industrial sectors. Hence, in addition to the microeconomic studies that may look at historic trends and extrapolate leakage impacts, WSPA suggest that ARB commission a forward-looking macroeconomic study that could build on studies by Charles Rivers Associates (CRA) that have been provided to ARB. We note, for example, that Dr. Stavins, in recent meetings with ARB, commented that a similar macroeconomic approach was used to analyze leakage within the Regional Greenhouse Gas Initiative (RGGI) (http://www.hks.harvard.edu/m-rcbg/rpp/Working%20papers/RPP_2008_03_SueWing.pdf)

Todd Schatski of the Analysis Group, a Harvard affiliated environmental economic consulting group lead by Dr. Robert Stavins provides this additional insight:

> "Analysis of empirical data provides potentially useful information about how markets will respond to new regulations. The usefulness of such analysis depends on whether past experience provides conditions that that closely corresponds to the way in which the new regulation will impact markets. In economic terms, the question is whether past experience provides a "natural experiment" that corresponds to the regulation's impact on markets.
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> Researchers at RFF and Berkeley outline analyses that will be used to inform ARB's determinations on leakage in California as a consequence of the AB 32 GHG cap-and-trade system. Presentations at the July 30, 2012 public workshop outline the empirical analyses that will be undertaken, but do not provide sufficiently detail to allow a complete assessment of the proposed work.
>
> There are many challenges to empirical analysis to help inform the likely impacts of leakage. A significant challenge is the paucity of regulations to create impacts similar to those of the AB 32 cap-and-trade program. The RFF and Berkeley researchers appear to be relying on past changes in energy prices being a good proxy for the impacts of cap-and-trade system in California. The usefulness of their results will depend, in part, on whether the market response to past changes in energy prices closely corresponds to market's response to the AB 32 cap-and-trade program. Several examples illustrate how this past experience may not closely correspond to the impacts of interest:
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> - The AB 32 GHG cap-and-trade system will impose a one-time, permanent change in energy costs to producers in one state, but not in neighboring states and countries. However, actual energy prices tend to move together over time, often in response to changes in certain market fundamentals. This is particularly true for natural gas prices in the western United States, where gas supplies can be moved between states (to some degree) in response to imbalances in market prices. Because natural gas is the primary

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or a major energy input for many industries, this may limit the impacts captured by the model. Electricity prices pose similar, although not as severe, problems.

In addition, many industries can shift a portion of energy use between electricity and natural gas depending upon which is least costly, which can mitigate the impact of change in prices in one market. Such substitutability is similar to, but not exactly the same as, industry's ability to reduce emissions to avoid allowance costs.

- While the cap-and-trade program will create a one-time, permanent shock to energy prices, market participants may see past changes in relative energy price between regions as transitory, reflecting temporary market conditions. Consequently, shifts in short-run and long-run output might be tempered by market participant's expectations that prices may subsequently revert back (fully or partially) to previous levels.

The research teams may have plans to address these (and similar) issues, both of which will lead to results that tend to understate the likely impacts of the AB 32 GHG cap-and-trade system.

Another issue is the extent to which the empirical approaches account for potentially unique industry structures in some sectors. Accounting for unique industry features may provide more accurate measurements of leakage, even if the issues raised above are adequately addressed. Some of the researchers own work, which has involved development of detailed industry-specific economic models for certain sectors (e.g., the cement industry), suggests potential limitations to empirical strategies that aim to estimate impacts across multiple industries within one integrated modeling effort. Further assessment of whether more detailed industry-specific models might better capture leakage effects could be a worthwhile investment, particularly for some of the larger emitting or more vulnerable sectors.

Finally, the presentations acknowledge a number of methodological challenges, but often do not provide details. The researcher's success in adequately addressing these cannot be assessed until further details."

Given these observations it seems clear that conducting a macroeconomic study alongside the studies suggested by ARB will combine to achieve the goals as set out by ARB. This seems to be consistent with ARB's expectations that *some* facility-specific data may show impacts of leakage reflective of larger economic impacts...

Comments on Studies Identified at the Workshop

The three studies outlined at the July workshop emphasized use of historic data to: 1) evaluate whether and to what extent energy costs affected leakage; 2) serve as an initial database that will help ARB look forward to evaluate the extent of leakage as it develops, and 3) assist in identifying leading indicators that could be used in forward-looking analyses to quickly determine if leakage is occurring. As input to these studies, ARB is considering surveys of facility-specific data including employment, profitability, and production data as a means to gain additional facility-specific indicators of leakage. We are concerned that requested data are indicative of historic economic conditions rather than the current situation. This is so because decisions on facility operations can involve multi-year planning and implementation. Hence, it is possible that facility-specific information may not show any

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variation despite extensive pressure from leakage. In contrast, we note leading indicators such as the forward price of carbon, capacity utilization, or those listed in the Lloydlist (http://www.lloydslist.com/ll/sector/markets/) might be more relevant and provide more immediate information.

In addition, we note that ARB's studies will take a historical look back to 1970s on electricity, natural gas, and freight cost impacts and sensitivity for every EITE sector. While those factors may be reflective of operations for some industrial sectors, it may not be true for all sectors. For example, the focus on freight may be important for some commodities, it is not appropriate for refining costs. Conversely, energy costs are among critical drivers relating to refinery operations but may not be the most important for other sectors of the economy. Again, the need for an evaluation of leakage, both to the overall State economy and to specific industrial sectors, argues for a macroeconomic analysis that is tied to forward-looking projections as well as facility-specific data.

Sector-specific Analysis

The first two studies (RFF and UCB) are an effort to better understand the trade exposure impacts of increased energy costs (the new cost of operations when carbon pricing is included), but they could be modified to better assess impacts on refining. After the workshop meeting some of the researchers noted that a study specific to the refining industry might be appropriate. With respect to that study, WSPA notes that special attention is needed to address the following concerns:

- Historical data may not be able to properly evaluate the difference between a temporary issue of, say; short-term increases in electricity with long term changes in carbon costs. (i.e., temporary vs. long-term variable impacts)
- Historical data may not be relevant where there are step-changes in variables. In other words, it is not clear if changes in, say, the marginal cost of production, can be accurately modeled by "perturbations" (i.e., sudden and additional variable of carbon cost) in a model that is calibrated to evaluating the impact of well known (and established historic) changes variables.
- AB 32 Implementation involves overlapping regulations including Cap and Trade (C/T), energy efficiency improvement, energy, and fuels (such as RFS and LCFS) that impact our sectors costs and therefore should be addressed through any study to more accurately evaluate leakage on the sector. Because so much of these programs affect the refining industry, there is a need for a sector-specific analysis that informs the overall macroeconomic analysis. As part of that analysis, ARB should consider comparing the capacity utilization of the Pacific Rim or other international refineries with capacity utilization for CA refineries.

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Once again, thank you for the opportunity to submit these comments to you and we look forward to working with you in the near future. Should you have any questions, I would be happy to assist you.

Sincerely,

Cc: Edie Chang
Mike Wang

Attachments

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