PRAXAIR
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Mary Jane Coombs
California Air Resources Board
1001 "I" Street
Sacramento, CA 95814

RE: Praxair Comments on ARB Leakage Risk Studies and 5/18 Workshop

Dear Ms. Coombs:

Praxair, Inc.[1] ("Praxair") provides the following comments on the May 18, 2016 California Air Resources Board ("ARB") Workshop to discuss emission leakage and modification of the methodology for leakage prevention and allowance allocation to the industrial sector. The analyses discussed at the May 18th workshop would fundamentally change how the ARB addresses leakage risks. The analyses also appear to take a critical step towards improving the accuracy of the leakage risks California industrial entities face as a result of carbon prices through an assessment of domestic leakage. The new analyses are an important step in the design of a post-2020 program, but we believe there is more work to be done in at least four areas before the analyses should be integrated into the Cap-and-Trade Regulation. Praxair is very concerned that stakeholders have not been afforded an opportunity to review the actual changes to the leakage risk assessments prior to the release of the July 2016 rulemaking package. If these changes are adopted at the September 2016 Board Hearing, there will be little opportunity to incorporate substantive comments or improve the analyses before the regulatory changes take effect. In other words, the ARB should not change the leakage risk assistance factors that will affect allocations for the 2018 compliance year.

[1] Praxair, Inc., a Fortune 300 company based in the U.S., is a leading industrial gas company in North and South America and one of the largest worldwide. Praxair employs approximately 10,000 workers in more than 500 facilities across the U.S. and has had over 60 years of sustained operations in California. The company manufactures, sells, and distributes atmospheric, process and specialty gases, and high-performance surface coatings. Praxair's products, services, and technologies bring productivity and environmental benefits to a wide variety of industries, including aerospace, chemicals, food and beverage, electronics, healthcare, manufacturing, metals, among others. Praxair's commitment to *Making the Planet More Productive* means offering solutions that support a strong, growing global economy and minimize environmental impacts. As a result, Praxair has been consistently recognized for its commitments to safety, diversity, and sustainability. In September 2015, Praxair was named to the Dow Jones Sustainability Indices for 13th consecutive year. Praxair is the only U.S.-based company in the chemical sector to be selected for the World Jones DJSI for this number of consecutive years.

Instead, the regulatory amendments should be discussed throughout 2016 and 2017 and there should be ample time for the ARB to work with individual sectors to address aspects of the analysis that are unique to those sectors. As discussed in more detail below, Praxair has identified at least three areas that merit further analysis. First, the domestic leakage risk should include a broader geographic focus for certain products that are commonly shipped further than 500 miles (e.g., liquefied hydrogen). Second, the ARB should analyze more than just sensitivity to changes in energy costs. Certain products may be trade exposed due to process emissions associated with their fuel stocks. Third, the ARB should provide additional assessments of allowance price changes (i.e., not just a $10/MT allowance price) to better understand which industries and products would experience a linear increase in leakage vs. an exponential increase in leakage. Addressing these issues will create a more robust and accurate leakage assessment that accounts the diversity in California's industrial manufacturing sector.

DISCUSSION

1. Geographic Scope of Domestic Leakage Risk

The Domestic leakage risk analysis focused on a 500-mile radius. Praxair is concerned that for many industries this radius will not accurately portray domestic leakage risks because the assumption effectively limits the analysis to California's neighboring states. We know that California regularly competes with manufacturing in both the mid-west and the South. Liquefied hydrogen is one such example. There is no domestic competition within a 500-mile radius of California. However, outside of a 500-mile (i.e., between 500 miles and 2000 miles), Praxair regularly competes with other liquefied hydrogen producers for both in-state and out-of-state business. This is because the product is readily transportable across California's borders. The geographic scope of the domestic leakage risk analysis should therefore be broadened for certain sectors that show little competition within the 500-mile radius. In doing so, the ARB will more accurately account for the competition that sectors like liquefied hydrogen actually face and will better address not only emissions leakage at out of state facilities, but the transportation emissions associated with shipping products from out of state.

2. Process Based Emissions

The leakage risks analyses focused exclusively on the historic sensitivity of in-state production to fluctuations in energy costs. While this is a useful benchmark for many energy intensive sectors, there are certain sectors where a significant source of emissions is process-based. For example, the hydrogen liquefaction process (i.e. converting gaseous hydrogen to liquefied hydrogen) is highly electricity-intensive, and also results in direct GHG emissions costs through the processing of its fuel stock (natural gas). Praxair faces indirect compliance costs associated with both the carbon obligation in the electricity sector, and the liquefaction process also produces additional CO2 emissions on site. Additional processing steps are required to purify liquefied hydrogen, which results in increased emissions. By solely accounting for changes in electricity costs, the analyses will not fully reflect the sensitivity to changes in GHG costs. For products like liquefied hydrogen, the ARB should provide some additional analysis of the process based emissions.

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3. Allowance Price Assumptions

Both the international and domestic leakage risk analyses assumed a $10 allowance price, which is below the current floor price and well below where allowance prices may ultimately be in a post 2020 cap-and-trade program. The international and domestic leakage researchers indicated that when they analyzed higher allowance prices, the results were "generally" linear, meaning that as allowance prices increase, trade exposure risks would increase at a proportional rate. However, as discussed at the May 18th workshop, stakeholders are concerned that many industries have customers that are particularly sensitive to changes in product prices, and at certain allowance prices, supply will be completely satisfied by out-of-state production. In other words, for certain industries, the trade exposure risks may be exponential. This exponential trade risk was depicted in the work of the Emissions Market Assessment Committee, Market Simulation Group.[2] The ARB should further evaluate which industries may face non-linear leakage risks and adjust the outputs of the models to assume higher allowance prices for these industries.

CONCLUSION

Praxair appreciates the opportunity to provide these comments and supports the ARB's efforts to create more accurate leakage risk analyses. A robust assessment of leakage risks is critical to the future program design and the assessments discussed at the May 18th workshop make important improvements by creating a methodology for assessing domestic leakage risk. The assessments also call for fundamental changes in how the ARB calculates leakage and the ARB has yet to indicate how the analyses will affect individual leakage risk calculations. There is a need for broader stakeholder input before the analyses should be incorporated into actual regulatory changes. The ARB should not adopt revisions to the leakage risk classifications at the September 2016 Board Hearing. Instead, the ARB should strive to account for the diversity of California's manufacturing sector by providing ample opportunity to bolster the leakage risk analyses for individual sectors or products. Praxair looks forward to working with the ARB and providing its unique insights as an industrial gas producer in California.

Sincerely,

/s/

Armando Botello
Vice President, West Region
Praxair, Inc.

[2] See June 7, 2012 Meeting Presentation on Modeling Results, available at: http://www.arb.ca.gov/cc/capandtrade/simulationgroup/6_7_2012/modeling.pdf