August 26, 2013

Mary Nichols, Chair
California Air Resources Board
1001 I Street
Post Office Box 2815
Sacramento, California 95812

Re: Proposed Complexity-Weighted Barrel Benchmarking Methodology for Petroleum Refining and Hydrogen Production

Dear Ms. Nichols:

I am writing on behalf of Air Liquide Large Industries U.S. LP ("Air Liquide") regarding CARB's proposed Complexity-Weighted Barrel ("CWB") benchmarking methodology for petroleum refining and hydrogen production.

1. Background

Air Liquide is the world's leader in industrial and medical gases. Air Liquide and its affiliated companies operate twenty facilities and employ more than 500 people in California. Air Liquide's California operations include two hydrogen production facilities that supply hydrogen and steam to refineries under long-term contracts.

These third-party hydrogen plants are located within or adjacent to the footprint of the refinery they serve and are owned and operated by third parties, including Air Liquide. In the case of Air Liquide, these plants are dedicated facilities, each serving a single customer.

As suppliers of hydrogen and steam to petroleum refiners, third-party hydrogen production plants have a unique status among covered entities within the Cap and Trade program in that they are essentially components of larger facilities—petroleum refineries—which are also covered by the Cap and Trade regulations.

In addition to third-party hydrogen plants, petroleum refineries in California receive additional hydrogen from refinery-owned plants. These refinery-owned plants are treated as production process units under the CWT and CWB methodologies that CARB has proposed for

setting the benchmark for petroleum refining. Under the CWB methodology, these process units are assigned a "CWB factor" used to calculate the overall refining benchmark.

CARB recognizes that third-party hydrogen plants are an integral part of refinery operations and has indicated that those hydrogen plants should be treated consistently with in-refinery hydrogen plants. As such, CARB has also proposed using the same CWB factor to determine the benchmark for third-party hydrogen production plants, including those operated by Air Liquide.

Air Liquide believes that third-party hydrogen producers should, indeed, be treated consistently. Application of the proposed CWB benchmark provides refinery operators with a mechanism through which to receive allowances related to steam produced by their in-refinery hydrogen plants. In contrast, third-party hydrogen producers have no such mechanism to receive allowances for steam exported to the refinery.

As such, the application of the CWB Benchmark without adjustment for steam produced and sold by third-party hydrogen plant operators will lead to a significant windfall for refinery operators consuming the third-party steam and an equally significant shortfall for third-party hydrogen plant operators. For the reasons discussed below, equity between in-refinery hydrogen plants and third-party hydrogen plants requires an adjustment to the allocation of free allowances between the parties.

2. CARB's Proposed Treatment of Imported and Exported Steam Would Unfairly Burden Third-Party Hydrogen Plant Operators That Export Steam to Refineries

The CWB methodology allows a comparison of the greenhouse gas emissions of petroleum refiners and the determination of appropriate benchmarks for both refiners and hydrogen production facilities. However, the resulting benchmarks cannot be used to determine the allowances for refineries and hydrogen production facilities without adjustments for the differing "boundaries" of those facilities.

As discussed above, CARB has proposed using the CWB factor being developed for refiner-owned hydrogen plants to determine the benchmark for third-party hydrogen production plants. Under CARB's current proposal, a hydrogen producer that exports steam and electricity to a petroleum refiner for use in the refining process bears the compliance obligation associated with emissions generated in producing the exported steam and electricity. The party that receives or imports that steam and electricity receives allowances for emissions associated with those imports but does not hold the liability for the associated emissions. The result is a windfall to the refinery that undercuts the very incentives CARB is attempting to create through the Cap and Trade program.

CARB's current proposal would leave hydrogen producers exporting steam to refineries with a significant shortfall in their allowance allocations. In the process of hydrogen production through steam reforming, emissions resulting from the generation of steam typically make up

13% to 18% of total greenhouse gas emissions. The failure to provide allowances to cover this steam production would result in a large shortfall in the allocation to hydrogen plants and an equally significant windfall to refinery operators.

3. CARB's Proposed Treatment of Steam and Electricity Imports and Exports Would Create Windfall Gains for Refiners That Import Steam Under Fixed-Price Contracts

CARB's treatment of steam and electricity in this industry sector departs from one of the key principles underlying CARB's Cap and Trade system, which is that the entity that is responsible for covered emissions should both bear the compliance obligation and receive the industry assistance for those emissions. This principle is consistent with the purpose of the industry assistance program, which has the goal of avoiding "undue initial economic gain or loss to covered entities through allocation in the early years of the [Cap and Trade] program while still encouraging enhancement in the efficiency of productions processes." (Staff Report Re: Cap and Trade Rule (Oct. 28, 2010), App. J at J-21, J-29.) CARB has also stated that the industry assistance program should be designed to avoid windfall gains. (Staff Report Re: Cap and Trade Rule, App. J at J-8 to J-9.)

Here, CARB's proposed treatment of steam exports would create a large allotment of free allowances for a refiner importing steam from a third-party hydrogen plant, solely because it imports steam from the third-party hydrogen plant instead of producing steam at the refinery. The refiner would bear no compliance obligations for emissions associated with this imported steam.

This windfall would remain with the refiner where a hydrogen producer cannot pass-through Cap and Trade compliance costs to its refinery customer. CARB has suggested that such long-term or legacy contracts should be renegotiated to address Cap and Trade compliance costs. However, renegotiation of a fixed-price contract for steam supply is not commercially realistic, given the windfall that CARB has proposed conferring on refinery steam importers. The contractual counter-party has nothing to gain by renegotiation.

Moreover, CARB's current proposal to award allowances to cover certain long-term contract obligations will not aid hydrogen producers. CARB has proposed providing limited relief to cover certain long-term contract obligations in the electricity sector in proposed Section 95891(f) of the Cap and Trade Rule. However, this provision applies only to contracts in the electricity sector and provides only for a one-time adjustment of allowances for "Legacy Contract Counterparties" (in 2015 vintage allowances). Unless CARB amends this legacy contract proposal, the proposal would not cover a hydrogen producer's compliance costs for steam exports in any compliance period.

Furthermore, while we understand the windfall associated with electricity sector legacy contracts may be less troubling to CARB because the utilities are prevented from profiting from the value of those allowances and are required to redistribute their value to ratepayers, this is not the case in the hydrogen sector. Unlike the electricity sector, third-party hydrogen producers

subject to long-term contractual obligations are left to bear a significant cost that their competitors do not bear. This cost is entirely unrelated to a producer's relative efficiency and investments in greenhouse gas reduction activities. Yet the refinery receives a substantial windfall that unlike their colleagues in the electricity sector, they are allowed to keep. This dynamic directly undercuts the refiner's incentive to reduce greenhouse gas emissions.

4. Neither Efficiency Nor Consistency with the Treatment of Other Sectors Justifies CARB's Proposed Treatment of Steam and Electricity Imports and Exports in the Refining and Hydrogen Production Sectors

CARB staff have expressed two reasons why there should be no adjustments in the allowances provided to petroleum refiners and hydrogen producers to account for exported steam and electricity. First, CARB staff have stated that allowances should be allocated to steam consumers because the consumers are in a position to reduce steam consumption and thus greenhouse gas emissions. Second, CARB staff have stated that providing emissions to refiners or third-party hydrogen production facilities for exported steam would be inconsistent with CARB's treatment of steam exports with respect to other industrial sectors.

With respect to the first point, providing allowances for exported steam to the consumer rather than the producer of the steam does nothing to reduce steam consumption or greenhouse gas emissions. Steam is a co-product of hydrogen production, and third-party hydrogen producers do not determine the amount of hydrogen or steam consumed by its refinery customer. In fact, Air Liquide's plants are already among the most efficient in the state, and because steam production is a co-product of the hydrogen production process, Air Liquide cannot reduce its compliance obligations, as that is determined by the consumer. In addition, by allocating free allowances to the consumer, CARB is marginalizing the incentive for the consumer to reduce its consumption.

Third-party hydrogen plants produce steam very efficiently. As such, consumption of hydrogen-plant derived steam should be encouraged and should displace in-refinery boiler operations. CARB's proposal to burden hydrogen plants with the compliance obligation for emissions from exported steam runs counter to this goal.

There are also circumstances where CARB's approach would create a strong disincentive to the efficient production of steam. For example, if a steam consumer is not a covered facility under the Cap and Trade system, there would be a strong incentive for that consumer to produce its own steam (however inefficiently) and to reduce its reliance on imports from highly efficient (but Cap and Trade regulated) steam producers such as Air Liquide.

CARB staff's view that no adjustments should be made in order to remain consistent with other sectors is also not applicable in this context because CARB has already diverted from their standard benchmarking methodology by adopting the CWB model. While we appreciate the importance of regulatory consistency, CARB's proposed CWB approach already recognizes that the petroleum and hydrogen production sectors should be treated differently than other sectors. That is why CARB has developed the CWB approach to determine the petroleum refining and

hydrogen production benchmarks. Different treatment of different sectors, and different facilities within sectors, is appropriate when common sense and fairness require it. Air Liquide's proposed approach is also consistent with CARB's approach to the refinery and hydrogen sectors and further reinforces the incentive structures that are the goal of the Cap and Trade program.

A flexible approach is also consistent with the CWB. Solomon Associates, the developer of the CWB, makes clear that the approach can be customized for, among other things, "boundary conditions" used to include and exclude certain items within the CWB. Treating steam and electricity exports on a facility-by-facility basis is an example where such customization of boundary conditions is warranted.

5. The Allowances Provided to Refiners and Third-Party Hydrogen Production Facilities Should Be Adjusted to Allow for the Fair Treatment of Exported Steam and Electricity Produced at Third-Party Hydrogen Plants

For the reasons stated above, allowances provided to refiners and third-party hydrogen production facilities should be adjusted on a facility-by-facility basis to allow for the fair treatment of exported steam and electricity produced at third-party hydrogen plants. Such adjustments are necessary to avoid awarding a windfall to steam importers and unfairly disadvantaging steam exports from third-party hydrogen plants.

To address the current proposal's unfair treatment of steam exports from third-party hydrogen production facilities, we believe CARB should adjust allowance allocations for electricity and steam to award allowances for exported electricity and steam to the party that produces the steam and electricity. In addition to applying this methodology in the second and third compliance periods, third-party hydrogen producers should receive a true-up to account for the any shortfall of allowances awarded in the first compliance period under the existing 8.85 allowances/tonne H_2 benchmark.

Alternatively, CARB could address the inequitable treatment of third-party hydrogen producers under its current proposal by (a) adopting amendments to the Cap and Trade Rule that transfer the compliance obligation for emissions related to hydrogen and steam supplied as an intermediate in the petroleum refining process to the petroleum refiner and awarding the allowances to cover those emissions to the refiner; or (b) providing allowances for emissions attributable to steam and electricity supplied under long-term contracts by third-party hydrogen producers. Under this alternative, allowances should be provided to cover long-term contract emissions for all compliance periods covered by the long-term contract, through 2020, with appropriate restrictions on the banking and transfer of such allowances.

We believe each of these solutions would address the concerns expressed above while preserving the integrity of the Cap and Trade program.

Thank you for your consideration. We look forward to further discussions with CARB staff on this important issue.

Very truly yours,

/s/Dwayne Phillips

Dwayne Phillips
Director, Hydrogen/Syngas On-Sites Business Unit
Air Liquide Large Industries U.S. LP
4000 Nelson Avenue
Concord, CA 94520