



Union of Concerned Scientists

Citizens and Scientists for Environmental Solutions

September 22, 2011

James Goldstene, Chair Mary Nichols and Members of the California Air Resources Board
California Air Resources Board (CARB)
P.O. Box 2815
Sacramento, CA 95812

Re: Comments on Second Round of Proposed (15-day) Revisions to the AB 32 Cap-and-Trade Regulation – Offsets Protocol Evaluation, Offset Verification Oversight, Industrial Allocations, GHG Benchmarks and Specific Refinery Benchmark

Dear Mr. Goldstene, Chair Nichols and CARB Board Members:

Thank you again for the opportunity to respond to the changes proposed for the cap-and-trade regulation under AB 32, and to offer our recommendations on how the cap-and-trade program can be strengthened. And again, we would like to thank CARB staff for spending time to consider our constructive recommendations on these highly technical elements of the regulation.

To reiterate our longstanding position, the Union of Concerned Scientists (UCS) continues to support the inclusion of an enforceable cap-and-trade program as part of the package of policies and measures designed to meet the important emissions reduction requirements pursuant to AB 32.

Recommendations on offsets protocol evaluation and offset program oversight

In this second round of proposed changes to the cap-and-trade regulation, several important additions and clarifications were incorporated into the regulation regarding periodic reviews of offsets protocols (95971(b)), and performance reviews of verifiers (95132(c)(2&4) of the MRR) and registries (95986(k)(5)(B)). We support and appreciate these changes, and believe these reviews are essential to ensuring that offsets credits generated under CARB's offsets program meet the criteria outlined in the regulation. Moreover, it is important for all involved to have a sense of certainty that these procedures will be implemented, and for those being evaluated to be made aware of review procedures they can expect.

While these recent revisions are important, additional changes are necessary to ensure the overall integrity of the offsets program. Further enhancements to verifier and registry oversight are needed to ensure that offset project developers do not over-estimate the reductions from their projects. Additionally, it is essential to define basic terms for reviews of new and existing protocols to ensure they are not likely to generate credits from non-additional activities. Below are some of the most important changes we believe still need to

be made to the draft regulation or, perhaps in some instances, in a supplemental document to better ensure the integrity of CARB's offsets program.

California is in a position to create a model for other carbon offsets programs. As you know, the track record of offset programs has been poor with regard to the quality of the credits for greenhouse gases or for other gases. While the proposed regulation is structured to potentially have better results than other offsets programs, additional protections and oversight provisions are still needed. Given that the total number of offsets allowed for compliance under California's cap-and-trade program cumulatively through 2020 equals approximately 80% of cumulative emission reductions required under the program, the integrity of those offsets is critical to the effectiveness of the market-based program overall.

I. Recommended changes to the three reviews that were added in this round of 15-day changes

Protocol reviews:

1. We recommend the following change to the title of this section:
§ 95971. Procedures for Approval **and Review** of Compliance Offset Protocols.

We recommend adding the words "and Review" to the title of that section to reflect the addition made to that section.

2. We recommend a slight rewording of the following new item:

(b) All Compliance Offset Protocols shall be **periodically** reviewed and ~~periodically~~ revised if needed.

A slight change in the language may better reflect the intension of this revision. The reviews rather than the revisions should be periodic; revisions should be made as needed.

3. The following should be added to this section:

(c) A review shall be triggered when any of the following would result in substantial changes in the estimation of emissions reductions from offset projects:

- (1) Research advancements on quantifying emissions reductions from protocol project types;
- (2) Updates to related registry protocols that lead to more accurate or conservative measurement of emissions reductions;
- (3) Significant changes in market conditions affecting the rate at which projects would be developed without the offset protocol; or
- (4) Changes in the baseline.

Registry reviews:

Regarding the performance review of registries (95986(k)(5)(B)), we appreciate CARB's inclusion of this vital provision. However, a single review every ten years is insufficient. There should also be ongoing oversight over their work and/or a review at least once every five years.

II. Other changes that should be made – Protocol Assessments

We would like to reiterate the importance of providing further clarification regarding how new and existing protocols will be evaluated to ensure that the credits they will generate will represent real and additional reductions. The biggest challenge in running an offsets program is ensuring that the credits generated are real and additional since it is so difficult to determine what might or might not have occurred in the absence of the protocol. This requires performing an additionality analysis on all new protocols when they are considered for adoption, and periodically assessing existing protocols. An additionality analysis assesses the projects that are likely to be credited under the protocol and evaluates whether there is a high level of confidence that the protocol will not create more credits in total than the reductions the protocol causes (above what would have happened in the absence of that protocol).

In addition, a protocol review also involves an analysis of the additionality of the credits that have been issued under the protocol in the prior period.

Since this is essential to running an offsets program, we request that such an analysis be made explicit in the regulation, or perhaps for some provisions, in a supplemental document. As a minimum the following criteria and procedures should guide this analysis:

§ 95972. Requirements for Compliance Offset Protocols.

(a) To be approved by the Board, a Compliance Offset Protocol must:

(5) **Conservatively** account for uncertainty in quantification factors for the offset project type;

Rationale: Where there is systematic uncertainty (defined here as when an incorrect value would result in the incorrect estimate of the emissions reduced by all projects of a certain type in the same direction (high or low)), calculation methods should be conservative. This is necessary to ensure that California meets its emissions reduction targets. Reductions under an offsets program are inherently less certain than similar reductions under a cap because an offsets program measures emissions reductions against a counterfactual scenario. So that CARB's offsets program does not allow fairly certain reductions under the cap to be replaced with less certain, and therefore poorer quality, reductions outside of the cap, systematic uncertainty must be addressed conservatively.

add: (11) Ensure, with a very high degree of confidence, that the total number of credits generated by projects under the protocol will not exceed the total amount of reductions enabled by that protocol in addition to what would have happened without that protocol;

Rationale: This is meant to provide an operational definition of the terms “real” and “additional.” A protocol should not over-credit emissions reductions. It is impossible to assure that every single credit represents a real and additional reduction. But it is possible to have a high degree of confidence that, in total, the protocol does not generate more credits than the total reductions it enables (causes). This statement is at the heart of what an additionality assessment of a protocol would assess.

add (12) Ensure the project types that qualify under the protocol, absent being eligible as part of the compliance offset protocol, are not likely to be pursued, are likely to result in reductions that are negligible in number, or would likely have been pursued at significantly lower rates;

Rationale: By statute, all offsets credits used for compliance under AB 32 must represent real and additional reductions. By definition, if reductions are additional, one of the following three options must be met: the reductions would not have happened otherwise, or the reductions that would have happened otherwise are negligible in number, or the reductions that would have happened otherwise are very small in number compared to the additional reductions caused by the protocol. The only other possibility is that the reductions that would have happened without the protocol is not small compared to the additional reductions, in which case the protocol does not meet ARB requirements. We therefore believe that the above requirement is necessary for the additionality requirement to be met, and should be made explicit in the regulation to avoid any potential misunderstanding.

These additionality assessments should be made publicly available.

III. Proposed Changes on Verification & Reporting Oversight

§ 95977. Verification of GHG Emission Reductions or GHG Removal Enhancements from Offset Projects.

add: (e) The Board shall periodically review and evaluate the relationships between verifiers and verification bodies and project developers and consider a system where the Board assigns verifiers or verification bodies for each project.

Rationale: At present, offsets developers directly hire verifiers to verify the reductions they claim to have made. There is an inherent conflict of interest in the relationship between the developer and the verifier. Under this arrangement, verifiers have incentives to charge less, do less, and be less strict in their assessments in order to be hired again by the same developer or other developers. As experience is gained, we should consider implementing a system which would ensure stronger government oversight over the program and would avoid the conflicts of interest in the current system.

§ 95985. Invalidation of ARB Offset Credits.

Invalidating only the overstated portion of credits when reports overstate reductions by greater than 5% fails to create a strong disincentive to offsets developers from purposefully exaggerating the reductions from their projects. We suggest that CARB define a second higher percent threshold whereby overstatements of reductions by amounts over that threshold result in the invalidation of all of the credits generated by the project during that reporting cycle.

(h) Requirements for Non-Sequestration Offset Projects.

UCS supports the buyer liability language in this section.

§ 95987. Offset Project Registry Requirements.

(b) The Offset Project Registry must make the following information publicly available for each offset project:

(2) within 10 working days of the Offset Project Data Report being issued an Offset Verification Statement:

add: (F) Offset Project Data Report for each year the Offset Project Data Report was verified. Confidential information shall be treated as per section 96021.

Rationale: This enables stakeholders and other experts a chance to catch inaccuracies in the data reports, providing CARB with another avenue for catching misstatements. Under the Kyoto Protocol's offsets program, the Clean Development Mechanism, all data reports (Project Design Documents and Monitoring Reports) are made publicly available along with validation and verification reports. This has been an important source of information for the CDM governing bodies in overseeing the program and discovering reporting errors.

§ 95987. Offset Project Registry Requirements.

(e) The Offset Project Registry must audit at least 10% percent of the annual offset verifications developed for offset projects using a Compliance Offset Protocol.

In this provision, we are concerned that the verifiers will be informed beforehand which reports will compose the 10% of reports audited by the registry and which site visits will be accompanied by a registry representative. If the verifier knows ahead of time which reports and site visits will be audited, the audits only assess the ability of the verifier to do a proper job for those 10% of reports. If instead the verifier does not know which reports will be audited, they have an incentive to perform well on all verifications. CARB should specify that the verifier should not know all of the reports that will undergo increased scrutiny.

IV. Offsets Quantity

We propose that section 95854 of the revised regulation be modified so that, in the second and third compliance periods, the percentage of total emissions that would be permitted to come from offsets is reduced. We propose that no more than two percent of total emissions in the second compliance period and no more than one percent of total emissions in the third (and any subsequent) compliance period be permitted to come from any type of offset credit. This would be equivalent to roughly one-third of the emission reductions required in the 2nd compliance period, and approximately 15% of emission reductions required in the 3rd compliance period.

These modifications in quantity will help promote technological innovation in the highest-emitting sectors, increase opportunities for in-state co-benefits (including air quality benefits), and reduce the risk that a high proportion of compliance credits do not represent real and additional reductions in emissions.

Recommendations on industrial allocations, GHG benchmarks, and specific refinery benchmarks

The Union of Concerned Scientists (UCS) appreciates the opportunities we've had this year to share our data and recommendations to CARB staff on the issues of industrial sector

allocations and refinery benchmarks. In these areas, the most recent 15-day revised document causes us serious concern. Here is a summary of our recommendations followed by greater detail and supporting data on each recommendation. We urge the board to incorporate these recommendations into the final regulation.

Summary of Recommendations:

UCS makes the following specific recommendations for allocating allowances in the cap and trade program.

- A. The preferred option would be to allocate allowances exclusively with auctioning and address leakage issues via border adjustment if and when they arise.
- B. The leakage risk analysis, especially for the refining sector, needs to explicitly consider the costs differential between imports and California production. This analysis should be completed before the start of the second compliance period.
- C. UCS urges the promotion of technology -forcing best practices by basing benchmarks on best-in-class international or national carbon intensity standards which are transparent, based on publicly available information and do not subsidize dirtier lower quality crude feedstocks.
- D. UCS recommends that the WSPA based proposal used to distribute allowances among refineries, in the first compliance period, be rejected as it (i) ranks refinery performance on the basis of an energy efficiency index rather than carbon efficiency; (ii) lacks transparency and accountability being based on an industry funded, proprietary ranking system; and (iii) dilutes incentives for carbon reductions by deliberately compressing the distribution range of allowances among refineries to avoid financial consequences for poor performance.
- E. UCS recommends CARB re-consider the use of the CWT in the second and third compliance periods. CARB should not adopt an allowance allocation mechanism that supports the use of dirtier lower quality crudes. UCS commends CARB for conducting additional technical work to review and evaluate the CWT approach.
- F. UCS recommends that CARB provide analysis to support the changes in leakage categorization adopted in the second 15 day changes.

UCS urges CARB to maximize the use of auctioning in the cap-and-trade program in order to achieve the greatest public benefit from the program. Most of our comments and concerns could be adequately addressed by simply instituting auctions rather than the current free distribution of allowances for the industrial sector.

For the refining sector in particular, UCS is concerned that CARB has overestimated the likelihood of leakage risk, and this will result in subsidizing these carbon intensive facilities. We reiterate the need for a re-assessment of the leakage analysis to fully account for transportation costs and competitiveness of non-Californian products. We strongly support CARB's use of the simple barrel output based method (Appendix A, page 2) for the allocation of allowances for the refining sector as a whole in the first compliance period, and a move to full auctioning in the second and third compliance periods with rebates for investments in targeted carbon reduction technologies.

UCS does not support the use of the Solomon Energy Intensity Index (EII) (an earlier Western States Petroleum Association (WSPA) proposal) in the first compliance period. UCS is also concerned by the proposal to use the Carbon dioxide Weighted Tonne (CWT) measure in the second and third compliance periods.

Attached with these comments is a UCS report, 'Oil Refinery CO₂ Performance Measurement', by Greg Karras, Communities for a Better Environment (CBE). The report was prepared for the Union of Concerned Scientists in September 2011, and provides empirical analysis that evaluates the factors driving the high emission intensity of California refineries. The key finding of the report is that California refineries work with much dirtier, lower-quality crude oils which require greater processing and produce greater carbon emissions and co-pollutants on average than refineries in other refining regions of the US. This research finding supports our concerns that CARB's proposal to use the Carbon Dioxide Weighted Tonne (CWT) will lead to subsidizing the refining of dirtier, lower-quality crudes and this will increase the costs of achieving the overall carbon reduction goals of AB 32. Finally we are concerned about the changes in leakage assessment for certain categories of products with no explanation or supporting documentation.

Reassessment of leakage risk

UCS feels that CARB is overestimating the likelihood of leakage risk, especially in the refining sector, and this will result in subsidizing (via free allocations) carbon-intensive industries. There are significant costs from the free allocation of valuable allowances. If auctioned as we recommend these allowances could produce public monies rather than private assets and could be spent on lowering the costs of the cap-and-trade program. A reassessment of leakage risk is needed and should include transportation costs and the ability of non-Californian companies to compete with California producers, resulting in a more accurate assessment of actual risk. Imports of refined oil products are not competitive with domestically produced products because of transportation costs into California and the costs of adapting facilities to meet California's stringent fuel standards. Neither of these factors were analyzed when CARB assessed leakage risk for the refining sector. A reassessment of leakage risk categories should be done once this important research work is complete.

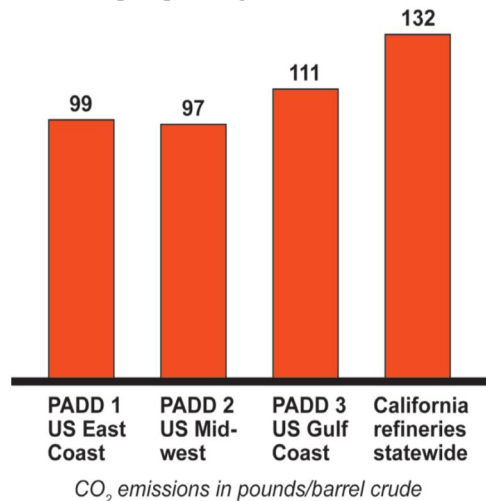
Recommendation: Leakage risk analysis, especially for the refining sector, needs to fully consider the costs differential between imports and California production. This analysis should be completed before the start of the second compliance period.

Petroleum Refinery Sector Compliance period 1, 2013-2014

In the first compliance period CARB proposes to use a simple barrel output-based metric to allocate allowances for the refining sector overall. UCS supports the use of an output-based metric which addresses leakage concerns and provides incentives for continued production of primary products in California. The adopted benchmark however is weak, being solely based on California refinery performance, which is much more carbon intensive than other U.S. regions (Karras, 2011). According to U.S. Energy Information Administration data, shown in Figure 1 below, California refineries emit up to 35% more CO₂ per barrel of oil

refined than refineries in any other major U.S. refining region, (Karras, 2011)¹. **The benchmark adopted in the simple barrel output-based metric should be made much stronger to reflect national best practices and performance.**

CARB is proposing different methods for the distribution of the allowances among small and



large complex refineries. The approach adopted for large refineries is very problematic as it relies on the Solomon Energy Intensity Index (EII) plus an adjustment factor used to reduce the spread of allowances between good and poor performers. This ‘tempering’ methodology for refineries originally proposed by the Western States Petroleum Association (WSPA) is troublesome as it deliberately narrows the distribution of allowances among refineries and so dilutes incentives for carbon reductions and minimizes the returns from investing in carbon reduction technologies.

Figure 1.
Average refinery emissions intensity 2004–2008, California vs. other major U.S. refining regions.
Source: Karras, 2011

If facilities with both high and low emissions get virtually the same number of free allowances then there is little incentive for poor performers to invest in cost effective emission abatement technology. CARB argues that this adjustment is necessary to reduce the competitiveness impacts of allowance allocation between in-state refineries (Appendix A, page 3), even though these economic impacts are a consequence of some refineries acting early to adopt more efficient technologies. The tempering adjustment is counter to the spirit and mandate in AB 32 to fully recognize early actions for emission reductions.

In addition, as pointed out in earlier comments, the use of the Solomon EII index is flawed since the rankings are based on energy rather than carbon efficiency. Also, the proprietary methodology of the EII index results in a ‘black box’ ranking system which lacks public accountability and is both non-transparent and based on confidential information.

Recommendation: Adopt an output based benchmark that reflects national or worldwide emission intensity performance. Revert to the CARB original proposal for allowance allocation among all refineries and do not use the Solomon EII index as the large refinery GHG performance benchmark. Mitigate refinery distributional concerns (if deemed necessary) through financial aid specifically targeted to improve the carbon efficiency of poorer performers.

Petroleum Refinery Sector Compliance periods 2 and 3:

¹ ‘Oil Refinery CO₂ Performance Measurement’, Greg Karras, Communities for a Better Environment (CBE). Report prepared for the Union of Concerned Scientists, September 2011 (attached with these comments)

In the second and third compliance period CARB is proposing to use an allocation methodology for all refineries that has been adopted in the European Union's Emission Trading Scheme (EU ETS), the EU carbon trading program. The proposal is to give refineries 0.0295 allowances per CWT they produce.

This benchmark is still in the implementation stage in the EU ETS and will be introduced in 2013 at the start of phase 3 of the EU carbon trading program. There is limited documentation on the proposed benchmark developed from confidential non-transparent data. The methodology is based on the proprietary Solomon Complexity Weighted Barrel (CWB) approach. The carbon efficiency basis of this metric is an improvement over the Solomon EII index; however both are non-transparent methodologies. From the limited documentation available it is clear that more allowances are generated with higher levels of CWT, and CWT increases with greater process utilization; so if a refinery increases the processing of crude feedstock they will get more allowances². These subsidies for greater processing of crudes will lower the cost of refining dirtier lower quality crude feedstocks.

This is a significant drawback of CARB's proposal. Karras, 2011 presents evidence showing that the main reason why California refineries have much higher emissions intensity is because they burn much more fuel to process each barrel of crude and this is a result of their use of relatively dirtier lower quality crudes. (See Figure 2 below).

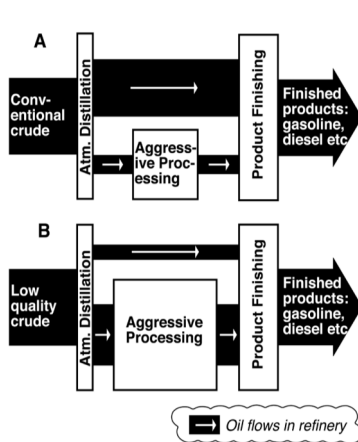


Figure 2: Simple Refinery Block Diagram.
Source: Karras, 2011

California refineries use more “aggressive processing” than refineries in other parts of the US. These carbon intensive units, such as cokers and hydro-crackers, add to a refinery’s “complexity” and also have the highest factors in the CWT system (e.g. a flexicoker has a CWT factor that is 16 times that for a regular distillation column). Some of the additional processing used by California refineries may be necessary to meet California specific fuel standards. However, it appears from the Karras report, that most of the carbon intense aggressive processing in California refineries is driven by the

use of lower quality crude oils. Figure 3 compares the use of various processes for crude vs. product processing in California refineries, versus those in other regions. Note the very heavy reliance of California refineries on *crude stream coking* and hydrocracking, two of the most energy intensive processes, while the *product stream processing* is similar across all regions.

² The use of the CWT benchmark does reward decreasing carbon emissions per processing unit, since greater process carbon efficiency relative to the benchmark would yield more allowances than was needed.

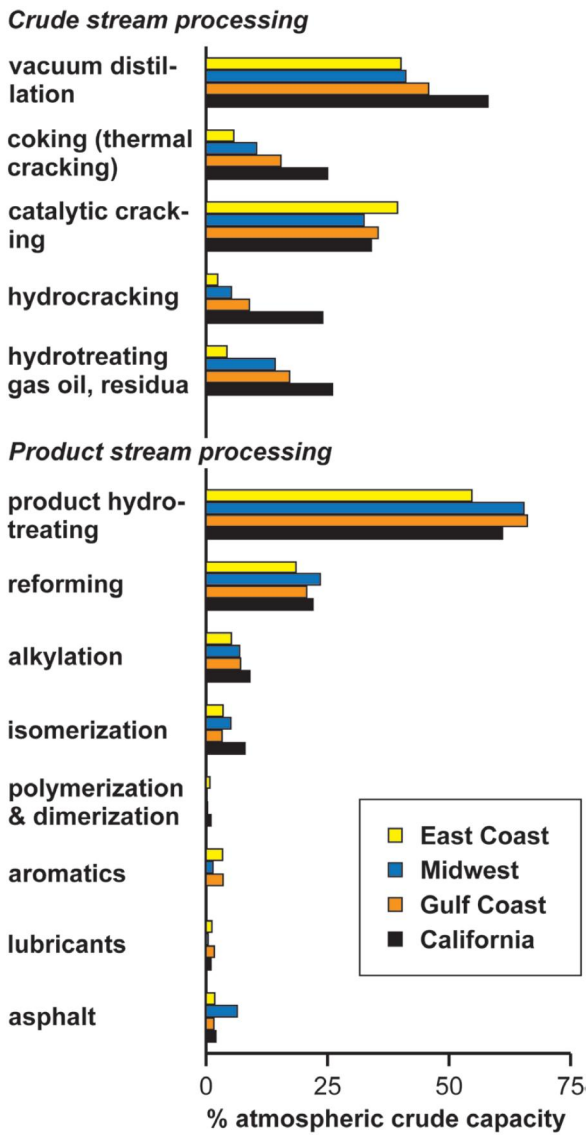


Figure 3. Refinery process capacities at equivalent atmospheric crude capacity, PADDs 1-3 and California (5-yr. avg.) Source: Karras 2011.

Thus, the use of the CWT will subsidize and support the use of lower quality crudes. This is a serious concern which could lead to underinvestment in lower carbon emitting refining configurations.

Going forward, it is vitally important that refinery investments incorporate the true carbon costs of lower quality crude feedstocks through appropriate pricing signals in the cap-and-trade program. Karras (2011) estimates that replacing 70% of the heavier crude feeds currently prevalent in CA with average crude feed quality used in East Coast refineries (PADD 1) would reduce refinery emissions in CA by around 20%. Conversely, replacing 70% of current CA crude feeds with lower quality crude feeds could increase CA refinery emissions by over 40%. These are substantial differences, showing the importance of setting carbon pricing incentives correctly so that refineries and other industries transition their production and inputs to lower carbon emitting technologies and fuels.

Recommendation: CARB should re-evaluate the use of the CWT and present documentation and analysis of how the CWT allowance allocations compare to the simpler output based methodology. In addition the adopted benchmarks should not support the use of dirtier lower quality crude feedstocks. UCS commends CARB for recognizing the need for this additional technical work and looks forward to participating and reviewing the analysis that will inform the future regulatory package mentioned in Appendix A, page 7.

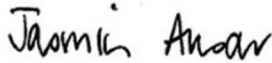
All other Petroleum and Coal Products Manufacturing and Paper Mills (NAICS codes 324199, 322121)

CARB has reclassified the sector, “all other petroleum and coal products manufacturing” and “tissue manufacturing”, as high leakage risk and so these sectors now get many more free allowances in the second and third compliance periods. There is no supporting documentation or analysis to explain this change and its impacts.

Recommendation: CARB should provide analysis to support the revised leakage categorization of these sectors.

We appreciate this opportunity to provide comments and constructive recommendations and thank CARB staff for their dedication and effort on this very important milestone for California. We look forward to continuing our work with staff to further strengthen these key elements of the cap-and-trade regulation.

Sincerely,



Jasmin Ansar, Ph.D.
Western States Climate Economist



Dan Kalb
California Policy Manager