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ELECTRONIC SERVICE
California Air Resources Board
Members of the Board of Directors
Mary Nichols, Chair
1011 I Street
Sacramento, California 95814
http://www.arb.ca.gov/lispub/comm/bclist.php

Comments of Communities for a Better Environment (CBE) on the California Air Resources Board (ARB) Proposed California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms Regulation, Including Compliance Offset Protocols; CCR Title 17, Subchapter 10, Article 5, Sections 95800 to 96022

Dear Chair Nichols and Members of the Board of Directors,

Communities for a Better Environment (CBE) respectfully offers the following comments on the California Air Resources Board's (ARB's) proposed revisions to its "cap–and–trade" scheme referenced above.

First, CBE must renew our objection to ARB's continued development of this flawed pollution trading scheme instead of and to the exclusion of alternatives that could protect our climate and environmental health. ARB proposes adding or modifying some 64 sections[1] of its proposed cap–and–trade regulation: ARB has not yet proposed a single substantive response to detailed and amply documented proposals for better alternatives. CBE and others have documented, demonstrated and proposed alternatives that would achieve more greenhouse gas (GHG) emission reductions while avoiding the additional toxic exposures in low income communities of color that ARB's flawed cap–and–trade scheme would encourage and providing more jobs for Californians than ARB's proposal.[2] ARB's chosen course of action is at best premature, and the trial court and Legislative Analyst have independently offered ARB this same advice. At worst—and ARB's own court submissions provide some evidence for this—the obviously disproportionate use of limited public resources on further refining cap–and–trade while ARB is assuring our courts that it is giving equal weight to the development and consideration of alternatives appears disingenuous.

1. ARB fails to comply with CEQA's Requirements.

ARB proposes extensive changes to the proposed cap and trade regulation that require it to revise the Functional Equivalent Document ("FED").[3] The purpose of a FED is to

[1] "Notice of Public Availability of Modified Text and Availability of Additional Documents."
[2] CBE's 28 July 2011 comments on ARB's Supplement to the AB 32 Scoping Plan FED, including all attachments thereto, are incorporated into this comment.
[3] *See Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412 at 447 (an EIR discloses new information if "the EIR is changed in a way that deprives the public of a meaningful opportunity to comment upon a substantial adverse

disclose and analyze potentially significant impacts of a project and then to mitigate significant impacts or adopt alternatives.[4] Here, while ARB proposes dozens of non-substantive modifications to the regulation, it also proposes many significant changes that have the potential to cause significant environmental impacts. CEQA is clear that "[e]nvironmental problems should be considered at a point in the planning process 'where genuine flexibility remains.'"[5] Yet, ARB has not disclosed the potential impacts of these changes and the public is given no opportunity to comment on them.

As the comments below demonstrate, some of the amendments to the proposed regulation would cause more severe and significant environmental effects than those disclosed by the draft FED. Among other things, the benchmark amendments allow excess emissions, undercut other regulations such as the Low Carbon Fuel Standard that are necessary to reach the 2020 cap, increase costs to the public, and exacerbate environmental justice issues.[6] Similarly, the refinery natural gas exemption would cause significant air pollution impacts and exacerbate pollution hotspots by taking one of the largest sources of combustion emissions at the refinery completely out of any compliance requirement. Numerous other changes also may cause significant environmental impacts.[7] ARB's failure to disclose potentially significant environmental impacts deprives the public of the meaningful opportunity to comment on substantial adverse project impacts and feasible mitigation measures and alternatives.[8]

ARB has not simply failed to *recirculate* the draft FED, though; it has failed to even revise the environmental document to disclose the impacts of its substantial amendments. At its root, ARB's process boldly mocks CEQA and frustrates its very purpose and plain language. But ARB may not use its FED process to allow projects to move forward without ever undergoing proper CEQA review.

ARB circulated the draft regulation and draft FED for comment in October 2010. But the resolution the Board adopted in December directs the Executive Officer to implement the cap and trade regulation without regard to when it completes the CEQA process. The Board acknowledges that *prior* to taking "final action," the Executive Officer shall approve a written response to comments (on significant environmental issues raised) on

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environmental effect of the project or a feasible way to mitigate or avoid such an effect."); *see also Preservation Action Council v. City of San Jose*, 141 Cal.App.4th (2006) 1336, 1357 (public should have had opportunity to comment on adequately analyzed, potentially feasible, and environmentally superior alternative).

[4] *See Laurel Heights Improvement Assn. v. Regents of Univ. of Cal.* (*Laurel Heights I*) (1988) 47 Cal.3d 376, 392.

[5] *See Sundstrom v. County of Mendocino* (1998) 202 Cal.App.3d 296, 307 ((citation omitted).)

[6] *See Vineyard Area Citizens for Responsible Growth, supra,* 40 Cal.4th at447 (recirculation is required when the added information shows a new potentially significant impact); *see also See Laurel Heights Improvement Ass'n v, Regents of Univ. of Cal*. (*Laurel Heights II*) (1993) 6 Cal.4th 1112, 1126.

[7] While our comments here focus on the amendments, it is necessary to point out that ARB could have proposed other amendments to address the concerns many groups raised in the December comments.

[8] *See Laurel Heights II*, *supra*, 6 Cal.4th at 1126.

the FED.[9] Indeed, CEQA requires that the agency prepare a response to comments before adopting a final EIR or FED.[10] This final action is due in October 2011.[11] Yet, at the same time, the Board directs the Executive Officer is to report back to the Board in July 2011 on the "finalization of the allowance allocation system", "implementation of a market tracking system", "implementation of an auction system", and implementation of an offset tracking system." Indeed, at the same time as these comments are being taken, and before the final FED is prepared, ARB is actively preparing markets for cap and trade. As such, the Board has adopted a cap and trade regulation before completing CEQA.

The process is further aggravated because the Board in its December resolution also directed the Executive Officer to "modify," several aspects of the regulation, and never mentioned considering the environmental consequences of the changes. The resolution includes over six pages of directions to the Executive Officer that allows him to make significant changes to the regulation. For instance, the staff is to develop carbon sequestration requirements and determine methods of credit allocation. These are not "modifications" in the definitional sense. Some of the proposals have to go back to the Board, but again, without the benefit of CEQA. The bottom line is that the Board has not considered CEQA or environmental consequences at all in deciding whether or not to approve this Project. As it now stands, the Executive Officer alone will review the FED comments, which are based on the pre-amendment regulations. At least the Executive Officer must have the benefit of comments on the completed draft EIR, one that reflects the true project and its impacts. ARB should not continue to compound its errors.

Closely related to the more pure CEQA issues described above, ARB's decision to create an overlapping comment process further undermines public participation and ARB's ability to genuinely consider the project's significant impacts. During the comment period for the Scoping Plan alternatives, ARB released for comment these cap and trade regulation amendments, the summary of which itself spans 44-pages. It is not possible to fully comment on both documents at once. ARB eventually extended the 15-day comment deadline for the amendments by two days, from August 9th to August 11th[12] but this extension still assumes that the public can work more than full time on cap and trade. This is clearly not what CEQA intends. ARB's insistence on thrusting this regulation forward without ensuring that it will avoid significant impacts casts serious doubt on the process as a whole and CARB's willingness to hear from all but a select few "stakeholders" whose opinions are solicited.

Given the likely significant environmental impacts from the substantial changes to the proposed regulation, ARB should revise and recirculate the FED before adopting any amendments to the proposed cap and trade regulation.

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[9] CARB Resolution 10-42, p. 8.
[10] 14 Cal. Code Regs § 15132; Pub Res. Code § 21000; 17 Cal. Code Regs § 60007.
[11] *See* "Notice of Public Availability of Modified Text and Availability of Additional Documents" p. 2.
[12] *See* "Notice of Public Availability of Modified Text and Availability of Additional Documents" p. 1.

The balance of these comments are focused on ARB's proposed revision of its decision to give petroleum refineries free permission to continue and even increase GHG emissions; specifically, ARB's revisions to tables 8-1 and 9-1 of sections 95870 and 95891. These revise the timing and amount of refinery emissions which ARB proposes to "allocate" for free (proposes not to control) in ARB's proposed equation given in section 95891. As ARB's own AB 32 program documentation acknowledges, oil refineries are the largest industrial emitter in its program.

2. ARB's proposed refinery performance benchmark lacks scientific support.

ARB proposes a refinery GHG emissions performance benchmark (§ 95891 Table 9-1) that is based on five assumptions, none of which is supported by publicly or scientifically verifiable data or evidence.

First, ARB assumes that refiners' emissions reports pursuant to ARB's Mandatory GHG Reporting Rule (MRR) are accurate. The sum total of these polluter-reported emissions is quantitatively different from the statewide emissions based on publicly reported, openly verifiable statewide refinery fuels consumption data and emission factors developed and used by the Energy Information Administration for reporting U.S. emissions under international treaties. (See Attachment Crude–1.[13]) The reason for the discrepancy cannot be verified publicly because, despite the proffered excuse that MRR emissions are certified by "independent" contractors hired by the oil companies, both the emissions data and the certification details are kept secret from the public as a matter of ARB policy. Because ARB's emissions data are discrepant and secret and the availability of publicly verifiable emissions data proves that secrecy is unnecessary, ARB's unverified emissions benchmark lacks scientific support.

Second, ARB's proposal to benchmark emissions against "primary products" assumes that refinery products yield, specifically a mish-mash of motor fuels and asphalt, equates to refinery emissions such that emissions per barrel "primary products" is an adequate measurement of refinery emissions performance. ARB provides no data or analysis supporting this assumption. ARB ignores the fact that asphalt and motor fuels are very different products that are made in different ways; ignores the related fact that lumping them together violates ARB's stated "one product, one benchmark" principle,[14] and ignores peer reviewed evidence that refinery energy and emissions intensities are not significantly associated with refinery products nationwide.[15] Because available publicly

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[13] Research presented in this comment was conducted in part for the Union of Concerned Scientists to develop a GHG performance benchmark for refineries. All conclusions presented herein are those of CBE alone.

[14] ARB Appendix B, Development of Product Benchmarks for Allowance Allocation, Cap-and-Trade Regulation: July 2011 at 2.

[15] This paper: Karras, 2010. Combustion emissions from refining lower quality oil: What is the global warming potential? *Env. Sci. Technol.* 44(24): 9584–9589. DOI 10.1021/es1019965; including Supporting Information available from the American Chemical Society free of charge at: http://pubs.acs.org/doi/abs/10.1021/es1019965 is hereby attached electronically. This paper has been given to ARB previously. Its supporting documentation is lengthy and more efficiently

verifiable evidence indicates that ARB's "primary products" metric is not an appropriate metric for benchmarking refinery emissions intensity and ARB provides no data or analysis specifically supporting its assumption to the contrary, ARB's proposed benchmark lacks scientific support.

Third, ARB assumes that benchmarking individual refineries' emissions against products output data that are kept secret from the public will be accurate and appropriate. Because available publicly verifiable data and analysis indicate that it is not accurate, and ARB's use of secret products data would make the extent of this error unverifiable by the open scientific method, ARB's proposed benchmark lacks scientific support.

Fourth, ARB assumes that the average based on its secret products data, its secret emissions data, and facility identities it keeps secret (presumably to keep facility products data secret) represents refinery climate impact performance adequately. However, ARB's own chart presenting this average (Figure 3, Appendix B) indicates an uneven distribution of facility performance data that calls the representativeness of the average into question. Further, available publicly reported data show that fuels yield roughly tracks refinery crude capacity, and three of the four highest mass-emitting refineries emit less per barrel crude capacity than the average among California fuels refineries. (Attachment Crude–1.) That means ARB's assumed average could assign "good" performance to some of California's highest mass-emitters, and does not represent refinery performance adequately. Because publicly available evidence ARB does not discuss strongly suggests ARB's calculation method is inappropriate and ARB keeps the data it uses in this calculation secret, its proposed benchmark lacks scientific support.

ARB finally ignores refinery performance outside California. This ignores the majority of U.S. refinery performance data. ARB provides no scientific support for that omission. ARB does not even attempt to claim that California data alone adequately represent refinery performance, and in fact implies the opposite. (See e.g., Appendix B at 3.) Because ARB ignores relevant data, ARB's proposed benchmark lacks scientific support.

3. ARB's proposed performance benchmark supports poor performance.

Relevant available data and evidence that ARB ignores indicate that average California refinery emissions intensity is at the extreme-high end of the range among U.S. refining regions, exceeding that of any other region by a wide margin. See Figure 1. This is demonstrated by publicly reported data that were available to ARB, but had to be gathered and analyzed by non-profit organizations after it became clear that ARB would not perform and report this analysis at this time.[16]

ARB's data cannot rebut this conclusion, as shown by the refinery emissions for individual facilities in this chart. These are based on ARB-reported emissions and 100% utilization of refinery capacity, which is necessary because facility capacity utilization is

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addressed and accessible to all parties electronically. It is referenced formally herein as attached for the record.

[16] The data referenced are presented and documented in Attachment Crude–1, which is attached hereto, and incorporated into this comment.

not reported, but underestimates emission intensity. Also, ARB's emissions reports are not publicly verifiable because ARB allows refiners to keep the underlying data secret. Nevertheless, and despite this underestimation, ARB-reported emissions from all major California refineries exceed average Midwest and East Coast emissions and seven major California refineries exceed average Gulf Coast refinery emissions.

Refinery emissions performance across the rest of the U.S. demonstrates what refineries can achieve under the right conditions. Average statewide refinery emissions in California (384 kg/m^3 crude refined, 2004–2009) could be reduced by roughly 18 % if

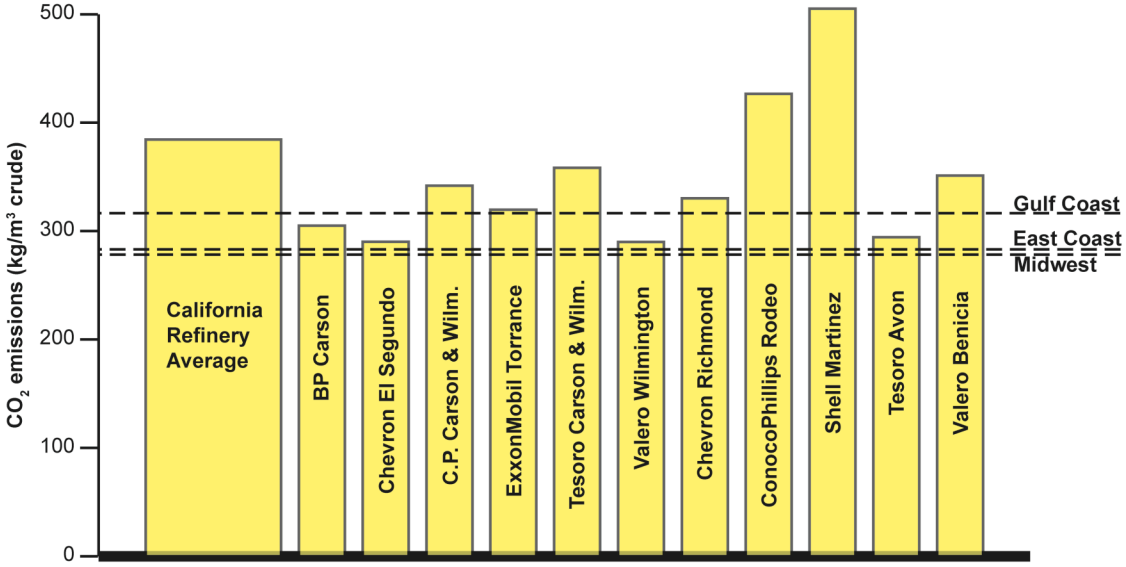

Figure 1. Refinery CO_2 emission intensity, California vs other U.S. regions

U.S. East Coast, Midwest, and Gulf Coast (PADDs 1–3): five year average of 2003–2008 data; and California refinery average: five year average of 2004–2009 data; data from Table 2-1, Attachment Crude-1. Facility emissions: two year average of 2008–2009 facility-reported emissions per vol. atmospheric crude distillation capacity; data from tables 2-5 and 2-6, Attachment Crude–1. Facility emissions may be underestimated by the assumption of 100% capacity utilization and/or errors in facility-reported emissions.

California refineries matched Gulf Coast refinery average performance (316 kg/m^3) and by roughly 28 % if California matched Midwest refinery average performance (278 kg/m^3). ARB's analysis commits a serious error by ignoring this evidence that a large refinery emission reduction is available.

ARB's proposal sets the benchmark at 90% of the California statewide average. Based on the publicly verifiable evidence presented in Figure 1 this would set the benchmark at the equivalent of 346 kg/m^3 crude refined. Average 2003–2008 performance in every other major U.S. refining region is below (better than) 346 kg/m^3. ARB's proposed benchmark would inappropriately sanction and support excess emissions and poor performance by California refineries.

4. ARB's proposed benchmark fails to measure performance accurately.

Peer reviewed evidence that ARB ignores shows that refinery energy and emissions intensities are not significantly associated with refinery products yield as noted above. Further, while some differences in refinery products yield are related to refinery emissions,[17] refiners choose to alter their products yield in response to other factors such as market conditions that clearly have no direct relationship to refinery emissions. Thus products yield varies independently from refinery emissions to some extent. Therefore products yield can be expected to be an unstable and unreliable metric for benchmarking refinery emissions intensity. ARB's rationale for its benchmark ignores these facts.

Available publicly verifiable national and California refinery operating data can be used to quantify the error from ARB's incorrect assumption that refinery products benchmark refinery emissions intensity accurately. CBE's analysis of these data[18] shows that average observed 2004–2009 California refinery emissions differ from those expected based on ARB's "primary products" benchmark by 38% and differ from those expected based on ARB's benchmark even when asphalt is excluded by 22%. Further, ARB's proposal to measure emissions intensity as mass emitted/volume product output is substantially less accurate and reliable than measuring emissions intensity as mass emitted/volume crude refined. This substantial evidence that ARB ignores shows that ARB's proposed benchmark would fail to measure refinery emissions performance accurately.

5. ARB ignores a more accurate and reliable performance benchmark.

CBE's published research shows that crude feed density and sulfur content, the ratio of light liquids to other refinery products, and capacity utilization explains differences in refinery emissions intensity across the major U.S. refining regions over ten recent years and predicts 2008 S. F. Bay Area refinery emissions accurately.[19] Applying this metric to operating data from California refineries[20] shows that observed average 2004–2009 statewide refinery emissions are within 1% of those this metric would benchmark.

ARB says it is considering alternative refinery benchmarks,[21] but ARB has ignored this evidence; discusses no option including crude feed quality; and admits that it has not collected California refinery crude feed quality data (Exhibit A, Attachment Crude-1).

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[17] See references 1, 3, 4, 30–35 in Attachment Crude–1.

[18] California statewide refinery data 2004–2009 and 1999–2008 comparison data from U.S. PADDs 1, 2, 3 and 5 analyzed by PLS and nonparametric (LOWESS) regressions; residuals appearing normal (Shapiro-Wilk; Anderson-Darling; Lilliefors; Jarque-Bera tests, α 0.05); data from Table 2-1 in Attachment Crude–1; analysis inputs and results detailed in Attachments 2–5 to these comments.

[19] Karras, 2010 as incorporated herein above: http://pubs.acs.org/doi/abs/10.1021/es1019965.

[20] Data from Table 2-1 and methods from reference 1 in Attachment Crude–1; analysis inputs and results detailed in Attachment 5 to these comments.

[21] ARB states that it is considering a "refinery complexity" metric suggested by an oil industry lobby group, which might be even more dangerously inaccurate than the "primary products" benchmark ARB now proposes. CBE reserves the right to comment on future ARB proposals.

ARB's admission that it did not collect any data on the density or sulfur content of crude feeds refined in California is noteworthy because it demonstrates that ARB could not have analyzed impacts of crude feed quality on refinery emissions in any part of its Climate Initiative including ARB's cap–and–trade scheme *and* its Low Carbon Fuel Standard. As one result of this broader failure of its analysis, ARB proposes an inaccurate refinery benchmark while ignoring a more accurate one.

6. ARB's proposed assistance factor lacks scientific support.

ARB's proposed revisions propose a refining industry "assistance factor as determined by the leakage risk of the product" at 100% from 2013–2014, 75% from 2015–2017, and 50% from 2018–2020 (Table 8-1, § 95870; Appendix B at 1) that would be used with ARB's benchmark in an equation (§ 95891) allocating free emissions allowances. In plain language, the intent and effect of this assistance factor is to exempt the California refining industry from even having to purchase emissions allowances for 100% of its emissions through 2014 and the vast majority of its emissions through 2020.

ARB's rationale for is that this assistance factor is to prevent or manage "leakage." In plain words, ARB claims that if California refineries are required to buy emissions credits, then: (a) this will reduce their profits so much that they will partially or fully shut down production; (b) refineries elsewhere will increase production and ship gasoline, etc. to California instead; and (c) that will result in equal or greater total emissions because refineries elsewhere are as dirty as California refineries or dirtier. This is a fantasy.

ARB proves no part of this fantastic claim. It provides no evidence that this has happened despite decades of refinery environmental requirements here and elsewhere. It provides no evidence that California refineries will reduce production due to the cost of ARB's emission credits. It provides no evidence of the capacity or costs of increasing refinery production elsewhere and then shipping—across the Rocky Mountains and/or the Pacific in California's case—products instead of crude. As part of the latter failure, ARB fails to present analysis of increased costs for shipping motor fuels due to the volume expansion of the fuels over that of crude and/or their increased volatility and fire hazard. ARB does not even show the *possibility* of the impact it claims because it provides no evidence of equal or higher average emissions intensities at refineries outside California. With respect to the California refining industry, ARB's "leakage risk" rationale lacks factual or scientific support.

7. ARB ignores substantial evidence that its assistance factor is incorrect.

The U.S. Energy Information Administration, and the California Energy Commission via the Petroleum Industry Information Reporting Act, have tracked and documented imports, exports, and movements of refined products for many years. Review of these data shows that in fact, California has become and remains a net *exporter* of gasoline and other refined products. This shows that decades of refinery environmental requirements in California which often were the first of their kind and/or most progressive anywhere have *not* resulted in any sign of the "leakage" problem that ARB now claims will occur. ARB ignores this evidence that its assistance factor analysis is incorrect.

Actual construction of long-term major capital commitments to expanded and continued refining infrastructure have been built in recent years at California refineries in El Segundo, Wilmington-Carson, Benicia, Martinez, Rodeo, Richmond and Bakersfield[22] and more are planned now, for example at Richmond.[23] ARB ignores this evidence.

At least one well documented measure could reduce statewide refinery emissions by approximately 20% or 7.8 million tonnes per year below current levels by 2020 for about 0.05 cents per barrel crude; however, ARB's proposed emissions credits would be even cheaper and more profitable for refineries.[24] Considering that refinery crude costs have fluctuated by nearly $100 per barrel in recent years while California fuels production stayed here, this evidence indicates ARB's leakage concern is misplaced. ARB's proposal does not address this evidence either.

Further, ARB's own U.C. advisors warned in writing that including the oil industry in a multi-sector cap–and–trade scheme will not work because oil companies would buy the allowances instead of clean up since oil is so firmly and uniquely entrenched.[25] In other words, instead of forcing them to shut down, ARB's allowance price will not even make refineries clean up. ARB ignores this evidence from its own advisors.

Finally, ARB ignores the California refining industry's extreme-high emissions intensity and the lower average emissions intensity in every other U.S. refining region. ARB cannot rebut this conclusion because it is supported by ARB's own MRR data as documented above. By ignoring it, ARB inappropriately ignores the fact that, even if California refinery production was replaced by large increases in fuels imports from refineries elsewhere, total emissions—which will not happen in the first place as shown above—could be reduced due to the lower emissions intensities of refineries elsewhere. Thus the equal shift or increase in emissions ARB fears is impossible in the first place.

It is not appropriate for ARB to ignore substantial evidence that its assistance factor is incorrect.

8. ARB's proposed assistance factor is directly contradicted by ARB's LCFS.

ARB's assistance factor would seek to maintain or increase California refinery fuels production because ARB assume that if California fuels production is reduced it will be replaced by equally or more carbon-intensive fuels produced elsewhere. In contrast, ARB's Low Carbon Fuel Standard (LCFS) was established to replace high-carbon fuels, primarily refined petroleum fuels, with low-carbon fuels, targeting a 10% reduction in transport fuel cycle emissions by 2020. If the LCFS replaces refinery fuels with lower carbon fuels, equal or higher-emission fuels would not replace them. Thus, unless ARB assumes that its LCFS will fail, it will be impossible for ARB's assistance factor

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[22] See State Clearinghouse records and city/county/AQMD records pursuant to CEQA.

[23] See City of Richmond Planning Department records, 2011 Revised Renewal Project.

[24] CBE documents this at pages 47–57 of our 28 July 2011 comments incorporated herein.

[25] Farrell and Spelling, 2007. *A low carbon fuel standard for California, part 1: Technical analysis;* UCD-ITS-RR-07-07; Institute of Transportation Studies, U.C. Davis: Davis, California. 1 August 2007; see pages 22–24.

assumption to be realized. Conversely, if ARB's assistance factor succeeds in maintaining or increasing California refinery fuels production, the success of the LCFS will be impossible. Therefore, ARB's assistance factor for refineries and its LCFS are in direct and irreconcilable conflict. ARB cannot have it both ways. ARB inappropriately ignores this clear evidence that its assistance factor is unnecessary and inappropriate.

9. ARB's proposed benchmark and assistance factor allow excess emissions.

ARB's inaccurate benchmark and inappropriate assistance factor would allow emissions to increase far above current already-high emission levels by failing to address the dominant refinery GHG emissions driver when that driver is changing quickly now. Crude feed quality is the dominant driver of changes in refinery emission intensity observed nationwide and in California.[26] Statewide refinery crude supply is changing rapidly now such that up to three-quarters of the California refinery crude feed will most likely be from different or "new" sources by 2020.[27] ARB's proposal to sell refineries emission allowances that would allow increasing emissions for less than the profits they would make on the marginal savings from lower quality, higher-emission new sources of crude will strongly encourage them to switch to this "dirtier" feedstock, increasing emissions.[28] ARB's inaccurate benchmark and proposal to delay even the need for refiners to buy cheap pollution allowances at a profit would guarantee this result.

Based on the same data and methods that predict average observed 2004–2008 California refinery emissions within 1% as shown above, switching to the average heavy oil as defined by the U.S. Geological Survey for 70% of California refinery crude feed by 2020 would increase statewide refinery emissions by approximately 49% or 19,600,000 tonnes/year by 2020. (See Attachment 5.) Again, ARB admits it did not analyze this crude quality impact.

Ongoing emissions in excess of those that could be achieved by 2020 if ARB's flawed proposals are replaced by effective environmental protections would add another 7.8 million tonnes/year to the total emissions impact of ARB's flawed proposals. See below.

10. ARB's refinery benchmark and assistance factor fail to achieve available emissions reductions.

The long, terminal decline of California's existing crude production sources that has continued since the mid-1980s, government analysis and industry analysis *(19)* all project with confidence that some 70–76% of crude processed by California refineries in 2020 will <u>not</u> be from existing California production.[29] Further, the ongoing decline of Alaska's current production and the ease of decadal switching among foreign supplies demonstrated historically show that, for all practical purposes, up to three-quarters of the

[26] See CBE's 28 July 2011 comments; and Karras, 2010, as incorporated in this comment.
[27] See CBE's 28 July 2011 comments, as incorporated in this comment.
[28] See CBE's 28 July 2011 comments, as incorporated in this comment.
[29] 28 July CBE comments inc. herein; Attachment Crude–1 references 18, 19.

2020 California crude feed will be from "new" sources.[30] California refineries must select and adjust to new and different crude oils.

Since California refineries must change the driving factor causing their extreme-high emission intensity, they can choose blends of "new" crude oils of better quality, like every other major U.S. refining region does, and that would curb their emissions. Replacing the 70% of refinery crude input that will be lost from current California production by 2020 with crude the quality of the total average East Coast refinery input could curb average California refinery emission intensity to approximately 308 kg/m^3, a reduction of –20% or –7.8 million tonnes/year, as CO_2. This is based on the same data and methods that predicted currently observed California refinery emissions within 1% on average, and is detailed in Attachment 5.

However, ARB proposes to implement an inaccurate and unreliably benchmark and a flawed assistance factor that gives away for free the vast majority of allowances that refineries already can know they could buy later at a profit on cheaper, higher-carbon crude. Thus, ARB's proposal will not achieve this reduction any more than it will prevent the emissions increase discussed above. Therefore, approximately 7.8 million tonnes/year of available emissions reductions and 19.6 million tonnes/year of avoidable emissions increases, for a refinery emissions excess above that which can be achieved in 2020 totaling 27.4 million tonnes/year, can be expected from ARB's flawed proposals.

11. ARB's refinery benchmark and assistance factor increase costs to the public.

The excess emissions from California refineries that would result from ARB's flawed proposal will increase the emissions reduction burden on other sectors, cause failure to meet total climate emissions targets, or both. ARB inappropriately ignores this potential for increased emissions to increase health impacts and related costs to Californians. ARB also inappropriately ignores the higher jobs factors for the other sectors that would be burdened with making deeper emissions cuts if ARB exempts oil refining as proposed. U.S. Economic Census data show that the refining industry is next to last in jobs per dollar annual sales, shipments, receipts or revenue.[31] Other major employment sectors such as public transportation and manufacturing of the green technology refiners might buy should they be required to clean up create more than *ten times* as many jobs per dollar. Thus, ARB's proposed windfall for oil refineries will not only poison us, it will result in less future job opportunities for Californians. ARB ignores these costs.

12. ARB's proposal exacerbates environmental injustice.

Low income communities of color are concentrated near California refineries and disparately exposed to air pollutants emitted by refineries along with GHG as copollutants that are known to increase risks for health problems which are in fact observed at elevated levels in these communities. This disparate impacts and their

[30] See references 14, 18, 19 in Attachment Crude–1.

[31] U.S. Economic Census, employment and annual sales, shipments, receipts, or revenue 1995–present; see also 28 July 2011 CBE Comments incorporated herein at 42.

exacerbation by the increase in GHG combustion products from refineries—perfect combustion resulting in only carbon dioxide and water being absent from the real world in which we must breathe—are well documented and beyond reasonable dispute. CBE details the evidence once again in our 28 July 2011 comments incorporated herein. ARB's own former advisors have done so as well.[32] Here, ARB again proposes allowing continued and even increased refinery emissions. ARB wrongly ignores this injustice.

13. ARB's proposal to exempt large portions of oil refinery combustion emissions from natural gas is misguided.

ARB has added the following new section 95852(a)(2) to the cap and trade regulation draft:

> **§ 95852. Emission Categories Used to Calculate Compliance Obligations.**
> (a) Operators of Facilities.
> **(2) Beginning in 2015, combustion emissions resulting from burning RBOB, distillate fuel oils, or natural gas liquids are not included when calculating an entity's compliance obligation. (page A-80)**

The definition of Operators of Facilities above includes Petroleum refining (§95811(a)) that report more than 25,000 MTCO2e/year (§95812(c)).

This new section appears to exempt oil refineries from including the major greenhouse gas emissions from combustion of these listed fuels, including natural gas liquids. Natural gas can be stored as liquid natural gas, which is later burned as natural gas. According to the EPA report *Available and Emerging Technologies for Reducing Greenhouse Gas Emissions from the Petroleum refining Industry,*[33] emissions from burning natural gas at oil refineries is one of the very largest sources of oil refinery CO2. This fraction is likely a higher fraction at California oil refineries compared to the U.S. average shown below, because many California regulations require the use of natural gas in specific processes instead of still gas (process gas). This chart puts emissions from natural gas combustion at nearly a quarter of total combustion emissions.

[32] Pastor et al. *Minding the Climate Gap;* http://college.usc.edu/pere/publications.
[33] October 2010 (p. 5) http://www.epa.gov/nsr/ghgdocs/refineries.pdf

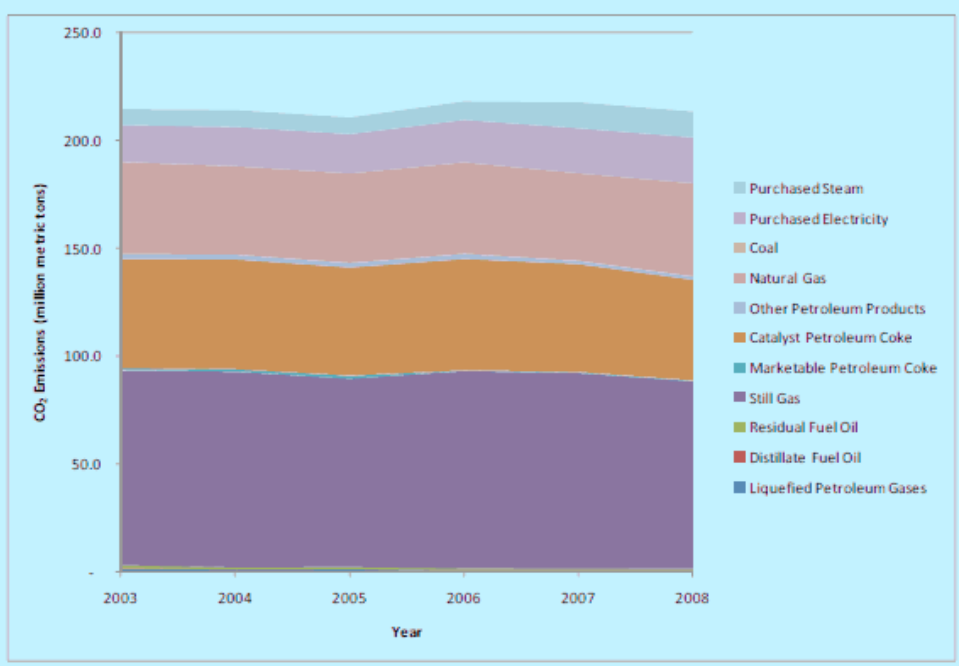

Figure 4. Direct CO_2 emissions from fuel consumption and indirect CO_2 emissions from electricity and steam purchases at U.S. petroleum refineries from 2003 to 2008.

According to CARB's *Notice of Public Availability of Modified Text and Availability of Additional Documents* for the cap and trade regulation, the added exemption was made for the following reason:

> **This modification was made to clarify that the compliance obligation for these specified fuels is at the <u>supplier</u> level in 2015.** These provisions apply only for stationary combustion and not suppliers. These changes are necessary to ensure compliance obligations are calculated as accurately as possible. (p. 10 (emphasis added).)

Thus, it appears that oil refineries will once again be freed from responsibility for another major combustion source located at the refinery. These refineries have already been left without responsibility for very large CO2 emissions from hydrogen plants, and oil refineries have no specific emission reductions target requirements at all in the Scoping Plan. The new proposal removes yet one more major source of greenhouse gases out of the oil refinery's compliance obligation under cap and trade.

This exemption will cause a significant environmental impact. For example, combustion of natural gas at oil refineries causes NOx, CO, and other co-pollutant emissions that impact neighbors when burned at the refinery. CARB's removal of responsibility away from the refinery, to the geographically separated natural gas supplier, causes many negative impacts. It removes the incentive or pressure for reduction at the refinery location. It also masks the emissions location by moving the responsibility of emissions that actually occur at the refinery, upstream to the natural gas

supplier which may be far away. *Minding the Climate Gap*[34] found that cap and trade could cause hotspots at oil refineries. This new exemption would further exacerbate the hotspot problem by taking one of the largest sources of combustion emissions at the refinery completely out of any compliance requirement.

There is an alternative—oil refineries can readily reduce the use of natural gas fuels. In fact, as an example, CARB has documented the feasibility of reducing natural gas use at oil refinery boilers and heaters in detail in its compliance pathways spreadsheets published on the CARB website.[35] Also, the previously cited EPA report identifies many feasible means to reduce energy use and combustion of natural gas and other fuels at oil refineries.

However, if instead the emissions are the responsibility of the natural gas supplier whose business purpose is to sell natural gas, such a facility has no ability or incentive to control the use of natural gas at the oil refinery user, nor to reduce greenhouse gas and co-pollutants from this use. The option of reduced use by the complying entity is no longer an option.

These same exemption issues apply to oil refinery combustion of distillate fuel at the refinery, which is another listed exempt fuel in 95852(a)(2). (This is because refineries do use (combust) some distillate fuel, although refineries usually instead sell distillate fuel or further refine it to make other products.) While distillate fuel represents a smaller portion of fuel combusted at oil refineries compared to natural gas use, it still is a source of emissions whose impacts CARB did not evaluate.

Oil refineries, despite being the largest industrial greenhouse gas emitters and the largest stationary sources of co-pollutants, have been systematically removed from responsibility for reporting or reducing emissions, at the same time that they are in the process of drastically *increasing* their greenhouse gas emissions due to the steady switch toward dirtier crude oil feedstocks. Oil refineries are not held responsible for submitting their mandatory emissions reports or energy audits to CARB (which are not available to the public). Already, oil refineries are allowed to contract with third parties on refinery property to make hydrogen used in the refinery without being held accountable for the resulting significant GHG emissions, and now it appears that the new exemption further exempts oil refineries from responsibility for another large combustion source located at these refineries—natural gas combustion.

[34] http://dornsife.usc.edu/pere/documents/mindingthegap.pdf , discussed in CBE's comments submitted to CARB July 28, 2011, which comments and attachments we incorporate in entirety by reference

[35] http://www.arb.ca.gov/regact/2010/capandtrade10/capandtrade10.htm

Conclusion

CBE urges ARB to set aside its flawed refinery benchmark and assistance factor and focus on alternatives to its flawed cap–and–trade scheme which we believe have been proven to work in climate and environmental health protection where, we believe, pollution trading programs have been proven to fail.

Respectfully submitted 11 August 2011

(s)	*(s)*	*(s)*
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Attachments: Crude–1, CBE Comments to CARB July 2011
2. Analysis inputs and results, ARB primary products metric
3. Analysis inputs and results, primary fuels mix metric
4. Inputs and results, emissions/vol. products vs crude quality and fuels
5. Inputs and results, emissions/vol. crude vs crude quality and fuels
6. EPA refineries report