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COMMUNITIES FOR A BETTER ENVIRONMENT

Mary Nichols, Chairman
James Goldstene, Executive Officer
California Air Resources Board
1001 "I" Street
P.O. Box 2815
Sacramento, CA 95812
Via email: mnichols@arb.ca.gov, jgoldstene@arb.ca.gov

Re: **California's Proposed AB32 Scoping Plan unfortunately has fatal flaws – Revise or Reject the Plan**

Dear Chairman Nichols and Mr. Goldstene,

We thought hard about making the condemnation of the State Scoping Plan in our comments below. We held high hopes that at adoption, the plan would provide not only major greenhouse gas reductions for California's large emissions, but would set a strong standard for the rest of the U.S. and the world to follow. We know that the task has been quite challenging, but the stakes are too high to provide any but the frankest assessment of the plan. None of us has the luxury of time to solve climate change slowly, so we urge you to consider our strong criticism in the light of this crisis.

We have concluded the plan fails to meet AB32's required goals of greenhouse gas reductions by 2020, because, among other things, ARB is relying on a highly complex, poorly modeled, unenforceable pollution trading. The plan also fails to meet its requirement to address Environmental Justice impacts, and fails to address toxic co-pollutants of greenhouse gases.

The plan will increase criteria and toxic air emissions as well as water pollution in California, and will especially do so in low-income and communities of color, communities that are already grossly overburdened. California's plan will also severely impact the environment outside of California, and its market-based system should not be replicated elsewhere. Furthermore, it squanders the unprecedented opportunity to solve climate change and at the same time solve California's severe public health hazard of smog (since both are caused by fossil fuel use) by planning for emissions reductions out of state rather than in communities in-state. It squanders the opportunity for creating a new economy of green jobs within California. The plan fails to protect severely burdened communities of color from increasing toxic hotspots, or even to minimally evaluate this problem. The Board can correct these severe deficiencies, but there is no shortcut to solving climate change by hoping that businesses outside the state will solve the problem through the market. The Board must give the directive that we do the work right here in California, and set the standard for the rest of the nation to do the same.

Please see our summary below, and detailed comments.

Summary of Plan deficiencies:

1. **The best measures in the Scoping Plan are already required by other laws or Early Action Measures, making the plan seem far more comprehensive than it is.** (These measures include Pavley, RPS, and many Early Action items).
2. **The Plan depends on poorly modeled Cap & Trade measures that lump together highly complex and toxic Oil Refineries and other Industry with Residential, Commercial, and Electricity Sectors, that have nothing in common as pollution sources or economic entities.** This Enron-style market plan is so complex, and spread over such large and international geographic regions, that it has no hope of achieving equivalent and enforceable reductions including greenhouse gases and toxic co-pollutants. It will increase toxic hotspots in the most severely burdened California communities, and undermine California residents' democratic input into local pollution control. It even undermines its own pollution trading scheme by allowing widespread offsets. The full and detailed economic modeling to be carried out for CARB was never completed.
3. **The CPUC's detailed modeling of Cap and Trade for the electricity sector, which found that $100/ton would be needed to achieve reductions, is many times higher than the prices expected and planned for carbon credits,** so trading in this sector will fail to achieve greenhouse reductions but still add to electricity costs
4. **The plan fails to require the worst industrial polluters – California oil refineries – to directly reduce emissions despite available controls, and despite their continuing, unchecked switch to heavy, contaminated crude oil**. The same is true for all other industrial polluters.
5. **A cornerstone of Transportation emissions controls in the Plan -- the Low Carbon Fuel Standard (LCFS) – will <u>increase</u> greenhouse gases**, and will severely increase smog, water pollution, worldwide food shortages, increased food prices, and damage to wildlife. This increase is due to the LCFS's dependence on corn ethanol (now acknowledged in the LCFS to cause increased greenhouse gases), and the failure to prevent switches to heavy crude oil at oil refineries. The switch to heavy crude oil is happening now but will drastically increase unless the Scoping Plan addresses it.
6. **The plan still allows almost all of the state's smog regulations to continue exempting the highly-potent greenhouse gas methane (which also causes smog)**
7. **The Mandatory Reporting Regulation – essential to assessing the quantities of greenhouse gas emissions and reductions in the Scoping Plan -- allows oil refineries to keep greenhouse calculations secret from the public**, and allows conflict of interests in report verification – this could be easily remedied with almost no administrative cost to the state.

Communities for a Better Environment (CBE) is a 30-year old social justice organization focusing on environmental health and justice, with thousands of members statewide. Our members in working class communities of color live fence-line to toxic industry. These communities suffer from disproportionately high rates of asthma and respiratory illnesses, heart

problems, cancer, low birthrate, and miscarriages, and the toxic legacy of these polluting industries. CBE has submitted detailed comments to ARB in the past on technical solutions to address climate change and environmental justice, and we have outlined several sets of recommendations voiced by the Environmental Justice Advisory Committee (see comments from October 1, 2008). Our comments are specific about how to fix the plan.

I. The Scoping Plan takes major credit for measures required by other laws or Early Action Measures, making the plan seem far more comprehensive, and relies heavily on "compliance flexibility"

Measures in Scoping Plan required by laws outside AB32, or required by Early Action Measures, or completely unspecified	**Reductions** *(MMTCO2E or million tons CO2 equivalent)*
California Light-Duty Vehicle Greenhouse Gas Standards *(required by Pavley Bill (AB1493))*	27 *(out of 31.7MM)*
Renewables Portfolio Standard *(33% by 2020 in Scoping Plan, but RPS of 20% is already required by SB1078)*	12.8 *(out of 21.3)*
Low Carbon Fuel Standard	15
Regional Transportation-Related GHG Targets *(SB375)*	5
Million Solar Roofs	2.1
High Speed Rail	1.0
Additional Reductions Necessary to Achieve the Cap	34.4 *(unspecified)*
High Global Warming Potential Gas Measures	20.2
Solar Water Heating *(AB1470)*	0.1
Vehicle Efficiency Measures *(0.55 tire inflation is an Early Action Measure)*	0.55 *(out of 4.5)*
Goods Movement • Ship Electrification at Ports (0.2 Early Action) • System-Wide Efficiency Improvements (already adopted Port Trucks, VSR)	0.2 + additional *(out of 3.7)*
Total above	**At least 118** already required
Scoping Plan Total <u>without</u> already required measures included	**Only 56 or less** (out of 174 currently credited to the Plan)

The scoping plans takes credit for at least 118 out of 174 million tons of CO2 equivalent. Taking credit for such a large proportion of already-required measures in the Scoping Plan is not a minor point, because it misleads the public into thinking that we must accept the whole plan with all its deficiencies because it includes important and broad-ranging measures. A closer look reveals that most of these measures are already required by law, by the Early Action Measures, or else are completely unspecified as listed above.

Furthermore, most reductions rely on Cap & Trade or other "Compliance Flexibility"

The Scoping Plan describes the "compliance flexibility" available through averaging, banking, trading, etc. for the bulk of the measures in the Scoping Plan (130 out of 174 MMTCO2) as follows:

> The recommended cap-and-trade program provides covered sources with the flexibility to pursue low cost reductions. It is important to recognize, however, that other recommended measures also provide compliance flexibility. As is often the case with ARB regulations, many of the measures establish performance standards and allow regulated entities to determine how best to achieve the required emission level. This approach rewards innovation and allows facilities to take advantage of the best way to meet the overarching environmental objective.
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> Table 3 lists the proposed measures that include compliance flexibility or market mechanisms. This flexibility ranges from the potential for tradable renewable energy credits in the Renewables Portfolio Standard to the incentives to encourage emission reductions in electricity and natural gas efficiency programs to the averaging, banking and trading mechanisms in the Pavley and Low Carbon Fuel Standard programs to a multi-sector cap-and-trade program. (page 21)

Table 3: Measures With Flexible Market Compliance Features

Measure	Estimated Reductions
Additional Reductions from Capped Sectors	34.4
California Light-Duty Vehicle Greenhouse Gas Standards (Pavley I & II)	31.7
Renewables Portfolio Standard	21.3
Electricity Efficiency	15.2
Low Carbon Fuel Standard	15.0
Mitigation Fee on High GWP Gases	5.0
Natural Gas Efficiency	4.3
Goods Movement Systemwide Efficiency	3.5
Medium/Heavy Duty Vehicle Hybridization	0.5
Total	**130.9**

(page 22)

II. Cap and Trade Schemes Do Not Significantly Reduce Emissions But Do Cause Toxic Hotspots and other Environmental Injustice

Cap and Trade Schemes Do Not Work

Enumerable environmental justice groups, mainstream environmental groups, economists and scholars have vividly detailed why cap and trade schemes simply do not work to significantly reduce pollution. But from an environmental justice perspective, the concern is not only that trading schemes divert attention from real and effective pollution reduction measures, but that people who live in low-income communities and communities of color will be the hardest hit from the extreme weather changes and catastrophic conditions brought by global warming, and will experience health impacts from increased hotspot pollution, among other environmental injustices. The Plan's failure to demonstrate that it can overcome the known pitfalls inherent to cap and trade, and decision to feature cap and trade as the superstructure for the AB 32's implementation despite its negative impacts on low-income communities of color, violates the letter and spirit of the Act.

Cap and trade systems fail for numerous reasons. Major reasons are summarized below.[1]

Overallocation

Overallocation plagues cap and trade schemes. The European Union emission trading system (EU-ETS), the world's largest multi-national trading scheme, was established to fulfill the Kyoto Protocol requirements. Phase 1, which ran from 2005 – 2007, is commonly considered to be a disaster. Overall emission reductions were not achieved due primarily to the overallocation of credits - leading to windfall profits for corporations, instead. *See* Michael K. Dorsey *Carbon trading won't work Los Angeles Times* (April 1, 2007)[2]; Kevin Smith, *"Obscenity' of carbon trading*, Carbon Watch (November 5, 2006)[3]. Companies lobby to get as many credits as possible, and miscalculate or misestimate the number of credits they are "entitled" to. As a result, the market was saturated with credits. Even when not motivated by fraud, inadequate monitoring actually makes it extremely difficult to determine the baseline.

Similarly, the South Coast Regional Clean Air Incentives Market, designed to reduce South Coast Basin nitrogen oxide (NOx) and sulfur oxide (SOx) emissions, was fraught with overallocation issues. Credit allocation was based upon the highest level of NOx and SOx ever emitted over a five year period by a given facility, regardless of whether this level accurately reflected the facilities' current or average emissions[4]. As a result, the credit supply so exceeded demand that in RECLAIM's first three years, 85% of the credits sold for $0. ((*See* Richard T. Drury et al., *Pollution Trading and Environmental Injustice: Los Angeles' Failed Experiment in Air Quality Policy*, 9 *DUKE ENVTL. L. & POL'Y F.* 231, 266 (1999)) Moreover, emissions were

[1]See Factsheet – the Cap and Trade Charade – for another overview from and environmental justice perspective.
[2] http://www.latimes.com/news/opinion/la-op-dorsey1apr01,0,776167.story?coll=la-opinion-rightrail
[3] http://www.carbontradewatch.org/index.php?option =com_content&task=view&id=64&Itemid=36.
[4] The Drury article identifies two additional provisions of RECLAIM that created ways to inflate the emissions baseline, further feeding overallocation. *See* Richard T. Drury et al., *Pollution Trading and Environmental Injustice: Los Angeles' Failed Experiment in Air Quality Policy*, 9 *DUKE ENVTL. L. & POL'Y F.* 231, page 264, fn138. (1999)

estimated based on emissions factors which are surrogates of actual measurements. These emissions factors can have margins of error of fifty to one hundred percent. (Drury at 259)

Overallocation is also anticipated in the Regional Greenhouse Gas Initiative (RGGI). "States Aim to Cut Gases by Making Polluters Pay," New York Times, September 16, 2008[5]; see also *Point Carbon*, November 1, 2007; *see also* Carbon Finance, "RGGI oversupply risks being "reminiscent of Phase I of EU ETS."[6]

Accurate credit allocation for allowances or auctions is a key assumption in a functioning cap and trade system. Industry has an overwhelming incentive to cause overallocation because once the market is saturated, credit prices plummet. This provides an "out" for industrial facilities allowing them to avoid facility upgrades and credits that reflect the true price of the emissions. Cap and trade will be rendered worthless at the outset. There is no evidence that this obstacle can be overcome and certainly nothing in the scoping plan that avoids this outcome.

Monitoring and Equivalency

Effective monitoring is essential to set the cap, determine the initial credit allocation and ensure that businesses are actually trading – or upgrading – when they exceed their allocation. Cap and trade programs are marred with monitoring and equivalency problems. Not all sources are or can be equipped with CEMs such that emissions can be directly and accurately reported. One reason that the Acid Rain program worked was because all of the participating facilities installed continuous emissions monitoring so that emissions were automatically reported and penalties automatically imposed. (Alice Kaswan, *Environmental Justice and Domestic Climate Change Policy* 38 ELR 10287 (2008) p. at 10298) RECLAIM also required CEMs but those CEMs were not all installed until years after the program was underway, and then, electronic data reporting requirements were violated 40%-80% of the time. (*See* Drury at 280) The Clean Air Act Acid Rain trading program also only involved one type of source; it was designed to address SO2 emissions from fuel-fired powerplants in the northeastern United States. The EU-ETS program, RECLAIM, and the one proposed in the scoping plan include a great variety of sources, monitoring requirements, and enforcement practices in carbon. (*See* Kaswan at 10298) And carbon is emitted with other pollutants, an issue that is less a concern with SOx . Monitoring would have to capture all of the potential co-pollutants. Again, these emissions are estimated based on emissions factors, which can have margins of error of fifty to one hundred percent. (*See* Drury at 259)

The equivalency problem follows monitoring. Once the relative value of carbon emissions from a source is determined, and that value is converted into an offset, there are a couple of other problems – identifying the appropriate offset to cause the pollution reduction. Moreover, as a practical matter, offsets only theoretically result in the reductions need within the required timeframe because often, the benefits of the trades don't occur until many years after the emissions. For instance, 1,000 new trees planted to offset carbon emitted today will take many years to grow and absorb the equivalent carbon. In fact, these projects can actually increase greenhouse gas emissions, in addition to negatively affecting local communities, habitat and agriculture. (*See* Larry Lohmann, *Carbon Trading: A Critical Conversation on Climate Change Privatization and Power*, Development Dialogue No. 48 (September 2006) p. 227-229)

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[5]http://www.nytimes.com/2008/09/16/us/16carbon.html?_r=2&sq=RGGI%20Sept%2016&st=cse&adxnnl=1&oref=slogin&scp=1&pagewanted=1&adxnnlx=1221838476-vts8YOhWyimYj4FiN1reUg);

[6] http://www.carbon-financeonline.com/index.cfm?section=lead&id=11498&action=view&return=home

Additionally, the value of where the offset is located should be factored. For instance, public health and (green) job benefits should accrue locally. These issues pose serious challenges to effective trading.

Discourages Innovation

Rather than encourage innovation, trading and offsets discourages it. Overallocation is a primary reason for this. The credits become so cheap that it is far less expensive to buy credits than to invest in new technology. (See Drury at 264, 268) If buying credits is faster and cheaper than conducting research, investing money, submitting applications, and undergoing a review process, then businesses will buy the credits. In RECLAIM, trading did in fact discourage innovation. (See Drury at 251) But innovation is absolutely necessary to addressing the problems ultimately. This fact is commonly acknowledged. As one article points out, "By reducing the short-term costs of cutting emissions it could be undermining research and development into the low-carbon and energy-efficient technologies without which the problem will never be properly solved. Bizarrely, no one has thought to address this issue." (New Scientist, *Editorial: Can carbon capitalism save the world?* April 19, 2008.)

Verifiability

Trades lack real verifiability and are therefore ineffective. For example, EU-ETS trading fatally lacked a system for verification. In Larry Lohmann's book, *Carbon Trading: A Critical Conversation on Climate Change Privatization and Power* (2006), he describes a situation in which companies agreed to plant 25,000 hectacres of trees in Uganda as a carbon offset. Not only was the local population evicted to accommodate the project, but 10 years later, only 7,000 hectacres of trees had been planted. (*Id*. at 243-44) This outcome is likely in any interstate or international trading system because it is not efficient to create an agency and procedure needed to verify that each of the trades was carried out. Cap and trade is based on creating market efficiencies. The current scoping plan requires that the industrial sector achieve 100% of its reductions through carbon trading alone. This framework is not reasonably calculated to result in significant reductions.

Unverifiable Accounting Practices

Similarly, because trading programs exist primarily to create market efficiencies, they adopt expedient and sloppy accounting practices. The South Coast Air Quality Management District, the agency charged with protecting air and health in the South Coast Air Basin, has a "Priority Reserve" program intended to provide emission credits to "essential services." During some years, "essential services" has included fossil fueled powerplants. A few years ago, EPA finally demanded that the South Coast "prove up" and verify the credits in the program. After hundreds of hours of back accounting, the District acknowledged that,

> for the majority of the pre-1990 emission reduction credits (more than 60% overall), the AQMD at present time no longer has the ability to substantiate the validity of the original records based on the available records." (*SCAQMD Staff Report proposed rule 1315, September 8, 2006*)

The AQMD subsequently tossed out 60% of the pre-1990 emission reduction credits (and created new ways to generate new credits) but still could not describe what had happened to the remaining 40% of ERCs. Significantly, the AQMD does not track the life of any given credit, it just keeps a running tally. In a cap and trade system, it is critical to account for each credit and for the total cap.

Additionality

Additionality is essential in offset programs but historically has been lacking. Additionality is the idea that reductions meant to offset emissions should be reductions that would not have otherwise occurred. The Clean development mechanism is an offset market of the Kyoto protocol that rewards developing countries for investing in clean technologies. But a Stanford study concluded that 1/3 to 2/3 of the CDM offsets did not represent actual emission cuts – rather, they were reductions from projects that were slated to have been built anyway. (EJ Matters, July 2008, page 1, citing *Billions wasted on UN climate programme: Energy firms routinely abusing carbon offset fund, US studies claim*, The Guardian, May 26, 2008;[7] *see also* New Scientist, "Editorial: Can carbon capitalism save the world?" April 19, 2008.) Similarly, the group, International Rivers claims that nearly ¾ of all of the registered CDM projects were already complete when they were approved and provided money by the CDM. (*Id*.) Thus, a trading program was credited for reductions that would have occurred anyway. (Id.) These problems are not confined to the CDM. Similar types of practices have been attributed to the Chicago Climate Exchange – offering offsets for current practices. (EJ Matters, July 2008, page 3, citing "Turning Car-bon Into Gold," July/August 2008) The scoping plan proposes joining a California trading scheme to a global international system, yet the kind of oversite required to minimize abuses was neither mentioned nor analyzed.

Cap and Trade Exacerbates Environmental InJustice

Not only does cap and trade add a layer of complexity to a problem that the market was not designed to fix, but cap and trade actually exacerbates environmental injustice because it causes and increases toxic hotspots, triggers volatility, and, in the form of offsets, causes displacement.

Hotspots

Pollution hotspots are areas where pollution concentrates locally rather than dispersing. (Greg Karras, *Flaring hot spots: Assessment of episodic local air pollution associated with oil refinery flaring using sulfur as a tracer* CBE Report (July 2005) Hotspots can have dire health and other quality of life consequences for local residents and workers. Toxic hotspots caused by trading is not merely hypothetical. Modeling has shown that RECLAIM actually increased NO_x concentrations in Wilmington, a low income community of color in Los Angeles, beyond what would have resulted without RECLAIM. (*See* Raul P. Lejano et al, *Testing the assumptions behind emissions trading in non-market goods: the RECLAIM program in Southern California*,

[7] http://www.guardian.co.uk/environment/2008/may/26/climatechange.greenpolitics/print , Attachment Billions wasted on UN climate programme

ENV'T SCIENCE & POLICY 8 (2005) pp. 371, 374) Hotspots are of particular concern in the carbon trading context. When carbon is emitted, it is not released as pure carbon, it is almost always released with other pollutants. Carbon dioxide and other greenhouse gases emit co-pollutants which can include particulate matter including heavy metals, VOCs such as benzene, sulfur compounds, and hundreds of other toxic compounds. By taking pollution that occurs across a large area and concentrating that pollution in an environmental justice community, the toxic load in that community increases. Ultimately, carbon is one good that cannot be separated and commodified. (*See Id*. at 367)

Price Volatility

Trading also increases price volatility. Price increases are inevitably passed on to consumers. Trading adds price volatility to this equation. For instance, a fossil fuel powered powerplant could install new technology to maximize power. Consumers can pay for this over time. Under a cap and trade scheme, however, a company might instead rely on the ability to purchase credits later. During a summer heatwave, that powerplant will suddenly have to buy credits at a high price, because others will have to buy at the same time. This summer price will suddenly be borne by consumers, including those who live on low and fixed incomes. Conversely, with direct regulation and new technology, there is more predictability, which is critical for people without financial wiggle room.

Undermines Public Participation

Public participation is a cornerstone of environmental justice. But because trades occur in private, they create a bypass mechanism for environmental review, participation, and information. And they are quick. Incorporating meaningful participatory justice in this context is extremely unlikely where projects can be so easily piecemealed and concealed. Even in today's smaller scale markets, it is extremely difficult to get any meaningful information about trades, where the credits came from, or where they went; and whatever is learned is found after the fact. This leaves no room for genuine participation.

Offsets lead to oppression

Trading is oppressive for environmental justice communities in the US and beyond. Throughout the "developing" world, people and peoples have been evicted, lost their land, and/or way of life due to trading offsets, allowing Europeans to offset their carbon use and continue to live as if global warming was not occurring.[8] Often, offsets reinstitute a form of oppression that

[8] The vast majority of indigenous peoples feel that the [Reduced Emissions from Deforestation in Developing Countries] will not benefit Indigenous Peoples, but in fact will result in more violations of Indigenous Peoples' rights. It will increase the violation of our rights to our lands, territories and resources; cause forced evictions; prevent access and threaten indigenous agriculture practices; destroy biodiversity, cultural diversity, traditional livelihoods and knowledge systems; and cause social conflicts. Under REDD, States and carbon traders will take more control over our forests. — Petition to the Members of the Permanent Forum on Indigenous Issues; *see also* Lohmann at 239-40 (eviction of thousands of local people from area in Uganda due to offset program to plant trees); Lohmann at 245 (as a result of one offset program, soils are quickly losing fertility, trees are cut from other areas creating slope hazards – leading to deaths – social networks have been cut off from food, herbs and medicines, etc.) severely challenging local culture and ability to subsist).

various sources have termed, CO_2lonialism. Among other things, local people commit themselves to decades of work at a net financial loss (not to mention cultural and health sacrifice) while companies profit without exposure risk, financially benefitting from the program. (*See* Lohmann at 234) Moreover, power differentials lead to exploitation. (*See* Lohmann at 238-239) California must not create a program that intensifies this pattern, and AB 32 would prohibit it. This issue illustrates that the larger the trading system, the greater likelihood of fraud and manipulation. It also advances the case for direct regulation.

The scoping plan proposes to expand a California cap and trade system to other countries where others might benefit from offsets. Put differently, AB32 would allow more pollution in California, including co-pollutants that would concentrate in low-income communities of color, with the hope that other countries will allow clean development. This vision fails to consider that these trades are not verifiable, they are often not surplus, they exacerbate the equivalency problem, and they increase the likelihood of oppression.

Because Cap and Trade Does Not Work and Exacerbates Environmental Injustice, the Scoping Plan Is Flawed

The Scoping Plan ("Plan") is inadequate because it does not actually require maximum technologically feasible reductions, and to the extent that the statutory language, "technologically feasible" is interpreted figuratively, the plan still fails, because it relies on a cap and trade system that does not work.

First, AB32 requires maximum technologically feasible reductions. Section 38561(a) states that,

> On or before January 1, 2009, the state board shall prepare and approve a scoping plan, as that term is understood by the state board, *for achieving the maximum technologically feasible and cost-effective reductions in greenhouse gas emissions* from sources or categories of sources of greenhouse gases by 2020 under this division. [emphasis added]

The common sense reading of the statute requires that all technologically feasible reductions are imposed, so long as those measures are cost-effective, and before a market-based system is imposed. The Plan fails to require technologically feasible reductions for industry. For instance, the Plan only includes a 0.3, plus 1.1 MMTCO2E (million metric tons carbon dioxide equivalent) reductions for industrial measures through technologically feasible measures.[9] Yet 20% of California's GHGs come from the industrial sector, and 40% of these come from oil refineries. ConocoPhillips' new refinery project will add 1.2 MMTCO2 equivalent alone, more than the total reduction required. Instead of requiring reductions, the Plan requires only an audit. Significantly and moreover, the Plan fails to demonstrate that feasible measures are not cost effective. In fact, the Plan fails to describe the cost effectiveness threshold. These flaws are fatal.

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[9] The revised plan includes the requirement that flare emissions are captured. This is important, but this is a source whose carbon emissions would not have been touched through cap and trade.

However, even with a different reading of the law, one that requires the greatest technologically feasible reductions "equivalent," the Plan fails because it is not reasonably calculated to achieve the maximum technologically feasible and cost-effective reductions. In addition to not identifying the maximum technologically feasible reductions, it does not demonstrate how reductions under cap and trade will be achieved given the pitfalls inherent to trading schemes. The scoping plan does not analyze those pitfalls or seek to avoid them. More importantly, it does not demonstrate that they *can* be avoided.

The plan does not include a cost analysis. Aside from the electricity sector, there is no actual economic evidence based on real world cost data for any sector in Cap and Trade. The Energy 2020 modeling failed, so essential cap and trade GHG reductions measure costs, which form the basis of the plan are missing. CARB's contractor did not complete the detailed, ground-up ENERGY 2020 economic modeling that was to form the basis of Cap and Trade for the Scoping Plan.

When the ENERGY 2020 modeling failed earlier this year, CARB had to bring in UC Berkeley and Davis at a late hour to try to compensate. They performed macroeconomic modeling in the few months remaining, to try to provide some basis for the Scoping Plan. The macroeconomic modeling that was completed does not include any detailed information on abatement costs in different sectors. Abatement costs are the costs of the different specific measures for reducing or eliminating CO2 emissions. Thus CARB has no way of predicting what the costs of abatement will be in different sectors. It is consequently impossible to predict how the Cap and Trade program will operate, how it will impact businesses, how much it will cost, and whether it will achieve any results. Costs of abatement are key in determining whether abatement will occur or not, so this issue is not only a matter of economics, but a matter which determines whether Cap and Trade succeeds at all.

ARB has documented the failure of the ENERGY 2020 modeling availability in Appendix G of the Scoping Plan as follows:

> **Energy Sector Modeling**
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> ARB has also been working with a third model, ENERGY 2020, developed by System Solutions Incorporated (SSI). In response to a competitive solicitation, **ICF International and its subcontractor, SSI, were selected to support a more detailed analysis of the economic impact of energy-related measures using the ENERGY 2020 model.** This modeling analysis would have provided another perspective to supplement the E-DRAM results.
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> **However, at this time, no results are available from ENERGY 2020 because the model has not yet been fully calibrated. The calibration effort consists of harmonizing the ENERGY 2020 model with a business-as-usual case consistent with California-specific projections for emissions as well as demand for energy sources (e.g., gasoline).** The calibration effort has required several more months of work than anticipated and, as indicated, is still underway.
>
> ARB has also been working with the contractor to incorporate detailed California-specific measure descriptions into the model. **Although the methodology to integrate ENERGY 2020 and E-DRAM has been developed (i.e., mapping ENERGY 2020 outputs to E-DRAM inputs so that the models can work together), the calibration of**

> **investment and fuel expenditures has not been completed.** Thus, ENERGY 2020 was not used in the analysis of the Scoping Plan, but is expected to help inform the subsequent regulatory phase of the program. ARB continues to work with ICF International and its subcontractor, SSI, to further refine and calibrate the ENERGY 2020 model and prepare it for evaluation of future regulations and policy designs.[10]

The statement above that the model has not been fully calibrated essentially means the modeling failed. While CARB is attempting to fix failure of the full modeling, it is untenable to propose adoption of a highly complex Cap and Trade program that blends together Industrial, Residential, Commercial, and Electricity sectors without even having completed the economic modeling on the costs of emissions abatement of all these sectors. Furthermore, we have no confidence that ENERGY 2020 modeling will ever be completed. Regardless, CARB cannot adopt a Cap and Trade program in good faith without completing this modeling.

Closely related, the statute specifically requires the Air Resources Board to consider "all relevant information pertaining to GHG emissions reductions programs in other states, localities, and nations, including the northeastern states of the United States, Canada, and the European Union." §38561(c). The Plan did not consider the pitfalls of these programs. Specifically, it did not consider the relevant fact that programs did not result in targeted emission reductions before deciding to design such a program for California. It also did not incorporate an obvious but recently dramatized lesson: that market-based systems are tied to financial markets, and that when these markets falter, all bets are off. For instance, the EUA fell 9.4% on December 5, 2008. (*See* Carbon Point, December 5, 2008.) Carbon prices collapsed as the oil prices started to slide. (*Id.*) In the RGGI, carbon prices took a free fall to less than the price of a latte, $3.07 per ton. *See* "Are We Saving the World Yet? RGGI Starts and So Does the Spin" EJ Matters," September 30, 2008.[11] Then RGGI finally set a floor of $1.86 so that the carbon was not completely free. (*Id.*) A pure market based system (which the scoping plan creates for industry) snuffs out the first term "technologically feasible" and leaves only "cost effective." And "cost-effective" can change radically from one day to the next. This plan is not calculated to bring maximum technologically feasible reductions.

Instead of analyzing other schemes to consider the wisdom of using cap and trade as the structure for AB 32, cap and trade was a foregone conclusion in "examining" those programs. The Plan document's references to other programs in no way sought to understand problems caused by trading in the industry context. For instance, it referenced the EU-ETS in advocating for Feed-in tariffs (see appendix 1, C-94) and made a recommendation to phase out of HFC-134a in new types of vehicles to follow a similar rule in EU system. (See appendix 1, C-180). But these examples reflect specific design recommendations within certain sectors for cap and trade. The ARB did not even attempt to present "all relevant information pertaining to GHG emissions reduction programs," such as their failures and inequities, as required in section §38561(c).

The Western Climate Initiative does not advance AB32 implementation goals. Bundling AB32 to the WCI only further ensures the ineffectiveness of reductions through cap and trade and diminishes the probability that it will allow actual reductions. There is no oversite to ensure

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[10] Proposed Scoping Plan Appendices, VOLUME II: ANALYSIS AND DOCUMENTATION, Appendix G, Economic Analysis, page G-4)

[11] http://www.ejmatters.com/2008_09_01_archive.html

that projects making reductions are actually implemented, or accountability in preventing environmental injustice and exacerbating hotspots. Moreover, combining the systems could actually increase greenhouse gases. One of the greatest potentials for this lies in the power sector. For instance, outside of California, we are all hooked into the same power grid. A state can promise to send California cleaner power but instead can just shift the power so that California is getting the cleaner power and the dirtier power is going elsewhere. The Plan later suggests that the program will be joined with international programs, exacerbating all of the issues highlighted above.

AB32 was designed to protect communities already adversely impacted by air pollution by its own terms. As we highlighted in our comments as members of the Environmental Justice Advisory Council, AB 32 requires the state board to (1) "evaluate the total potential costs and total potential economic and noneconomic benefits of the plan for reducing greenhouse gases to California's economy, environment, and public health; " (2) conduct workshops "in regions of the state that have the most significant exposure to air pollutants, including, but not limited to, communities with minority populations, communities with low-income populations, or both;" (3) "ensure that activities undertaken to comply with [AB 32] do not disproportionately impact low-income communities.;" (4) "direct public and private investment toward the most disadvantaged communities in California;" (5) "consider the potential for direct, indirect, and cumulative emission impacts from [market-based compliance mechanisms], including localized impacts in communities that are already adversely impacted by air pollution;" (6) "design any market-based compliance mechanism to prevent any increase in the emissions of toxic air contaminants or criteria air pollutants;" (7) "maximize additional environmental and economic benefits for California;" and; (8) "to convene an environmental justice advisory committee…to advise it in developing the scoping plan… and any other pertinent matter in implementing"[12] (*See* Recommendations and Comments of the Environmental Justice Advisory Committee on the Implementation of the Global Warming Solutions Act of 2006 (AB 32) on the Draft Scoping Plan October 2008, page 5) This plan intensifies and introduces new hotspots.

AB 32 allows market based mechanisms so long as the ARB considers direct and indirect cumulative emission impacts including localized impacts in areas already adversely impacted by air pollution, and so long as that market mechanism has been designed such that toxic air contaminant (TAC) emissions and criteria air pollutants are not increased, to the extent feasible. (Health & Safety Code § 38570) This requirement is for good reason; if we fail to incorporate environmental justice[13] when crafting solutions to global warming, we will fail, because these impacts ultimately await all of us. But, due to problems inherent to trading schemes, carbon trading is an ineffective means to significantly reduce carbon, and it exacerbates environmental injustice.

[12] H&S Code § 38561(d); H&S Code § 38561(g); H&S Code § 38562(b)(2); H&S Code § 38565.; H&S Code § 38570(b)(1); H&S Code § 38570(b)(2); H&S Code § 38570(b)(3); H&S Code § 38591(a).

[13] A condition of environmental justice exists when environmental risks and hazards **and** investments and benefits are equally distributed; when access to environmental investments, benefits, and natural resources are equally distributed; and when we all have access to information and participation in decision making in environment-related matters

There are Workable Solutions

Cap and trade will not work, but there are workable solutions. For instance cap and direct control, or direct control with a carbon tax imposed after all feasible controls are installed. California can be a leader in encouraging energy efficiency and alternative energy use. Ultimately, California will have to focus on encouraging reductions in use. As the legislature intended, we cannot afford to put this off to a future time. The ARB seems to be operating from a place of weakness and cites the reasons for relying on a trading scheme that businesses will leave the state if more stringent measures are required and California does not acquiesce to a trading program. But historically, the opposite has been true. A cleaner environmental encourages new residents and new business. This represents a real opportunity for California to be a leader, not the first state to jump on the same cap and trade bandwagon that has never worked.

III. The draft Low Carbon Fuel Standard will cause <u>increased</u> greenhouse gases, and severe smog, water impacts, food shortages, and more

The proposed Scoping Plan finds:

> Transportation activities are responsible for 38 percent of the greenhouse gas (GHG) emissions in California – or 182 MMTCO2E (2004). Because of its size, it is critical that the transportation sector achieve significant emission reductions toward the State's 2020 goal. **If the transportation sector does not provide significant GHG reductions, it would be difficult for another sector to make up the emission reductions.** [Scoping Plan at C-55-56, Appendix 1]

The Low Carbon Fuel Standard (LCFS) is one cornerstone of transportation emissions reductions measures and was adopted by the California Air Resources Board (CARB) last year as an Early Action Measure. LCFS is credited in the Scoping Plan with achieving major reductions of greenhouse gases (15 MMTCO2Eq). Unfortunately, not only will LCFS fail to meet the GHG reduction goal, it will actually cause GHG emissions increases and major harm to human and environmental health.

The LCFS seeks to lower the carbon content of California's transportation fuels (gasoline and diesel) by 10%. This is a good idea, but the Scoping Plan is counting on key structures in LCFS which are fundamentally flawed and not likely to be corrected before planned adoption of March 2009 unless the Board of Directors explicitly requires these corrections.

The draft LCFS fails to meet the primary goal of reducing GHG emissions because it 1) includes corn ethanol (which will increase fuel carbon content), 2) fails to address the switch to heavy crude oil use by refineries in the state (higher carbon), and 3) relies on unreliable out-of-state pollution trading. The draft LCFS also causes harm to the environment (major urban air and water pollution and damage to wildlife) and greatly adds to already-severe global food shortages.

The Board of Directors should either remove LCFS from the plan until it can be corrected, or require that the following recommendations be included in the Scoping Plan before its adoption.

Recommendations for fixing the Low Carbon Fuel Standard

- **Ban corn ethanol as part of LCFS** (and in Reformulated Fuels requirements) **due to <u>increased</u> GHGs, increased smog, and other severe environmental impacts.** While this is politically tough, it is the right and necessary thing to do. There is no longer any scientific justification for use of corn ethanol in California as a low carbon fuel.
- **Ban gasoline and diesel produced from Canadian tar sands crude oil and feedstocks in California**, and limit, then phaseout other heavy crude oils (just as coal is being phased out in the electricity sector)
- **Fully account cradle-to-grave GHG emissions and environmental impacts of all fuels and feedstocks (including Land Use Change impacts) for:**
  - <u>All heavy crude oil refinery inputs</u>
  - <u>Hydrogen generated from fossil-fuels</u> (remove exemptions)
  - <u>Ethanol and other biofuels</u> (corn and all biofuels)
- **Remove trading from LCFS in order to set a clear and strict Low Carbon Fuel Standard <u>within</u> California.** LCFS depends on averaging weaker in-state reductions with purchased out-of-state reductions (which are very hard to confirm and enforce). Trading within and outside the state undermines and dilutes a strong standard in California. Also, since other states frequently replicate California rules, setting an in-state standard creates a good model for other states to replicate.
- **Change the LCFS baseline year from 2010 to 2005 or 2004** (the most recent year before the LCFS regulatory process began). This will build in a lower starting point of greenhouse gas emissions (a baseline period when less heavy crude oil was present in oil refineries, and less corn ethanol was present in gasoline).
- **Add a public health analysis on the switch to heavier, higher sulfur crude oil at oil refineries that is occurring throughout the state, and which is not being addressed**
- **Further details identified below**

A. Ethanol in Low Carbon Fuel Standard <u>increases</u> GHGs & other impacts

Unfortunately, LCFS starts with a baseline of 10% ethanol (currently made from corn) which is added to gasoline. LCFS uses a future baseline year of 2010. Although the direct CO2 emissions from combusting ethanol itself is lower than the direct CO2 emissions from combusting gasoline or diesel, if you include the tremendous amount of GHG emissions caused by land use changes (see below), transport of corn across the U.S., and production of ethanol, the ethanol addition to gasoline actually increases GHG emissions.

According to a comment letter submitted to CARB by several Universities (attached), the carbon content of corn ethanol including Land Use Change emissions ranges from 100 to 200 gCO2eq/MJ (grams of CO2 equivalent per megajoule of energy available in the ethanol).[14] By

[14] Comment Letter to Mary D. Nichols, Chairman, California Air Resources Board, July 3, 2008, University of California, Berkeley, University of California, Davis, the Green Design Institute, Carnegie Mellon University,

comparison, CARB's Life Cycle Analysis for corn ethanol estimates only 75 to 90 gCO2Eq/MJ,[15] which compared to the Universities' calculations is an underestimate ranging from 11% to 166%.

According to CARB, gasoline currently includes about 6% ethanol; LCFS will increase it to 10%. CARB acknowledges that ethanol use will increase GHG emissions (see infra page 15). Despite LCFS's purpose to reduce GHGs, both the LCFS and California's reformulated fuels standards together cause increased GHGs.

This is not only counterproductive for reducing greenhouse gases, but extremely harmful to the environment. The South Coast Air Quality Management District provided several comments to CARB on this topic (see infra page 15). Comments were also submitted by EJAC and by EJAC member Tom Franz (President of the Association of Irritated Residents). These comments outlined not only the increase in GHG emissions and ARB's underestimation, but also the harmful impacts of corn ethanol production on California's Central Valley and its residents, including air and water pollution. These impacts and others are documented by multiple commenters.

The New York Times also summarized some of these issues in a recent article (November 18, 2008, attached), which found that despite earlier hopes for corn ethanol, all the new studies show that indirect land use effects of corn ethanol and biofuels in general cause increased greenhouse gas emissions:[16]

> Until late last year, corn ethanol had been seen as at least carbon neutral — and thus much cleaner than gasoline — because the greenhouse gases it absorbed while growing canceled out the gases it emitted during combustion. . . .
>
> **But then came a spate of new studies arguing that earlier calculations had failed to account for the emissions caused when land is cleared and tilled, releasing large quantities of stored carbon. In particular, the studies said, the earlier scenarios had overlooked the indirect or ripple effects of ethanol production — the carbon released when the diversion of land from food to fuel in the Corn Belt causes farmers elsewhere in the world to clear untouched land to make up for the loss.**
>
> The studies also said that some biofuels — waste material, forest residues, certain grasses — can be produced without harmful changes in land use and with benefit to the atmosphere. **But the indirect effects of converting food crops to fuel production were found to cause net increases in emissions in almost every case.**
>
> The industry says that such indirect effects are impossible to measure and that the studies are premature. One industry group has asked the E.P.A. to ignore them entirely. But it seems clear on its face that some land-use changes — e.g., cutting down rain forests to plant crops — would have seriously negative effects.

Purdue University, and California Polytechnic State University, http://rael.berkeley.edu/files/LUC-biofuels-Nichols_6-30-08.pdf, Attachment 5 LUC-biofuels-Nichols_6-30-08 UCBerkeley

[15] *Detailed California-Modified GREET Pathway for Denatured Corn Ethanol*, Draft, April 21, 2008, page 6, http://www.arb.ca.gov/fuels/lcfs/042308lcfs_etoh.pdf

[16] *Honesty About Ethanol*, New York Times Editorial, November 18, 2008 http://www.nytimes.com/2008/11/18/opinion/18tue2.html?emc=tnt&tntemail1=y, Attachment 2 at end of this document

The South Coast Air District & CARB found ethanol will increase greenhouse gases

Earlier SCAQMD comments (March 2008[17]) on the CARB Reformulated Gasoline Regulations found that corn ethanol demand may result in increased greenhouse gas emissions, and asked CARB to take action to prevent this. This comment discusses "E10" (gasoline with 10% ethanol added). Ethanol was required by CARB as a replacement for MTBE (Methyl Tertiary Butyl Ether) due to widespread MTBE water pollution.[18]

> ***The evolution to E10 in California – the largest gasoline market in the U.S., will accelerate the pressure for increased corn based ethanol production. Additional corn ethanol demand pressure may in fact result in INCREASED greenhouse gas emissions.***
>
> *…ensure that the incremental impacts of the Ethanol Emission Reduction Plan and the Alternative Emissions Reduction Plan not exacerbate greenhouse emissions on a lifecycle basis.*

In addition more recently, CARB itself acknowledges that corn ethanol will increase greenhouse gas emissions, in its recent draft LCFS regulation as follows:[19]

> *Commentary. 2010 baseline is CARFG with 10% ethanol (E10)* derived from corn, where 80% of the ethanol is produced via dry milling and 20% is produced via wet milling. ***To compensate for the corn-ethanol-induced increase in gasoline's carbon intensity, the LCFS requires a 10.5 percent decrease in the carbon intensity of the gasoline fuel group.*** *This reduction is needed to achieve a net 10 percent reduction in the carbon intensity of gasoline from 2010. This schedule is still under review and may be adjusted.* [page 3, emphasis added) [CARFG is California Reformulated Gasoline]

CARB first acknowledges that the move required by CARB to add 10% corn ethanol to gasoline "will cause an increase in gasoline's carbon intensity," then attempts to compensate for this by adding a half a percent additional decrease in carbon content to the standard. CARB has provided no documentation regarding the choice of 0.5% as sufficient compensation. Given the evidence regarding the large extent of GHG increased caused by ethanol, this small concession y CARB will not be nearly sufficient. It also means that first CARB is adding ethanol (with all its other negative environmental impacts) – that it knows will increase GHGs and then requiring additional measures in an attempt to reduce the GHGs caused by that very requirement. This is nonsensical, and a testament to the power of the ethanol lobbying industry. This move cannot be justified from either a GHG reduction or health perspective.

The oil refining corporation Tesoro recently filed a lawsuit contesting the ethanol inclusion in gasoline.

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[17] *South Coast AQMD Staff Comments on the Modified Text Regarding the 2007 Amendments to the Phase 3 California Reformulated Gasoline Regulations*, to James Goldstene, Executive Officer, California Air Resources Board, from Barry Wallerstein, Executive officer, SCAQMD, March 21, 2008, http://www.arb.ca.gov/lists/carfg07/59-scaqmd0001.pdf , Attachment 6 59-scaqmd0001

[18] Ethanol is another fuel oxygenate (for the purpose of turning toxic CO (carbon monoxide), emitted during gasoline combustion, into CO2). Despite opposition by many environmental organizations, which pushed for no oxygenate requirement (because of environmental impacts of ethanol), CARB adopted the requirement for ethanol substitution for MTBE.

[19] California Low Carbon Fuel Standard Regulation *Draft*, CARB, October 2008, electronic filename: 101008 LCFSreg_draft.

Tesoro Files Lawsuit to Prevent Ethanol Regulation[20]

"The CARB rule, which results in the increase of crop-based ethanol in gasoline, violates the intent established by another California regulation (AB 32), which calls for a decrease in greenhouse gas emissions to 1990 levels by 2020," Smith said in a statement. "This new rule increases greenhouse gases?? through the addition of more crop-based ethanol at the same time we are investing to reduce greenhouse gases."

While Tesoro's motives for opposing the ethanol inclusion may well differ from ours, we find ourselves in the unusual position of agreeing with Tesoro.

Land Use impacts of ethanol fuel are vast and underestimated in LCFS

Numerous studies now find that biofuels, especially corn ethanol, will cause increased greenhouse gas emissions when Land Use impacts are included. An article out of Princeton and other institutions published in Science Magazine (February 2008) found that corn ethanol will double GHG emissions, and also found that other biofuels will also increase GHG emissions by 50%:

Use of U.S. Croplands for Biofuels Increases Greenhouse Gases Through Emissions from Land-Use Change[21]

Most prior studies have found that substituting biofuels for gasoline will reduce greenhouse gases because biofuels sequester carbon through the growth of the feedstock. These analyses have failed to count the carbon emissions that occur as farmers worldwide respond to higher prices and convert forest and grassland to new cropland to replace the grain (or cropland) diverted to biofuels. **By using a worldwide agricultural model to estimate emissions from land-use change, we found that corn-based ethanol, instead of producing a 20% savings, nearly doubles greenhouse emissions over 30 years and increases greenhouse gases for 167 years. Biofuels from switchgrass, if grown on U.S. corn lands, increase emissions by 50%. This result raises concerns about large biofuel mandates and highlights the value of using waste products.** (emphasis added)

Land use change has already occurred due to inclusion of ethanol in gasoline. The drastic increase in corn produced in the U.S. for use in ethanol has already changed land patterns, to the point of stressing existing land use. Further increases will cause even greater harm. Some impacts of the shift to corn ethanol are evident in the following statistics:

- 2007 was the highest corn crop in history[22] (20% higher than 2006); in 2008 more than 30% of the corn crop was dedicated to ethanol production[23]

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[20] http://www.allbusiness.com/legal/legal-services-litigation/11603239-1.html, Attachment 7 Tesoro files lawsuit to prevent ethanol reg

[21] *Use of U.S. Croplands for Biofuels Increases Greenhouse Gases Through Emissions from Land-Use Change*, Searchinger et al, Princeton University, German Marshall Fund of the United States, Georgetown Environmental Law and Policy Institute, Agricultural Conservation Economics, Woods Hole Research Center, Center for Agricultural and Rural Development, Iowa State University, published in Science Magazine, 7 February 2008, abstract at http://www.sciencemag.org/cgi/content/abstract/1151861, Attachment 8 Princeton Croplands Biofuels Increases GHGs

[22] http://www.nass.usda.gov/Newsroom/2008/08_12_2008.asp, Attachment 9 USDA Forecasts Robust Corn Soybean Crops

[23] http://www.npr.org/templates/story/story.php?storyId=92559699 , Attachment 10 Ethanol to consume 30% of corn

- The price of corn reached approximately $8 per bushel in July, a record high[24]
- CARB's required increase from 5% to 10% ethanol will be the greatest increase in demand in history

CARB also identified the problem of land use change caused by biofuels:

What is Land Use Change?

Conversion of new or existing land brought on by increased demand for a commodity (e.g. biofuel). This effect is at a different location. Examples include:

• native grasslands converted to soybean farming due to increased demand arising from soybean cultivation being replaced by corn cultivation

• increased demand for fossil fuels likely to lead to land use change from Oil Sands

We are in the midst of severe worldwide food price increases and food shortages. Twenty countries have had food riots since January 2008.[25] The production of ethanol is displacing food production, bringing marginal lands into production, and increasing greenhouse emissions through soil tillage. Soils have twice the carbon of the atmosphere.[26, 27]

A severe example of Land Use change causing increased GHGs is the cutting down of ancient Brazilian rainforest to produce soybeans previously produced on U.S. farmland. Soybean crops in the U.S. are being displaced by corn bound for the ethanol market. Such activities increase greenhouse gases in the extreme rather than decreasing them (see photo).

[24] http://www.biofuelsdigest.com/blog2/2008/06/17/corn-futures-over-8-per-bushel-washington-may-have-to-suspend-or-reduce-the-renewable-fuel-standard-analyst-warns/ , Attachment 11 Corn futures over $8 per bushel
[25] http://www.economist.com/world/international/PrinterFriendly.cfm?story_id=11049284 , Attachment 12 Economist_com Food Riots
[26] http://www.sciencedaily.com/releases/2008/11/081124130948.htm , Attachment 13 Science Daily carbon in soils
[27] http://www.springerlink.com/content/p87512u475241n16/ Attachment 14 High Corn Prices Cast Shadow Over Ethanol Plants

Photo shows remaining sliver of ancient rainforest surrounded by acres of soybean fields in Mato Grosso, Brazil -- U.S Corn demand is diverting soybean production offshore -- John Lee, Time[28]

Closer to home, marginal lands for farming in the U.S. that are being brought into corn production destined for the ethanol market are increasing so dramatically, they have resorted to taking large tracts of erodible land previously left as conservation easements into corn production. This also severely impacts wildlife in those areas. Ethanol use in gasoline is reversing hard-fought conservation battles that brought previously endangered wildlife in the U.S. back to healthy populations. The State of Montana's publication, Montana Outdoors, wrote the following on this issue:[29]

> **CRP declines spell bad news for grassland birds**
>
> While you still can, enjoy the current populations of waterfowl and upland game birds in the northern Great Plains. Numbers will likely begin to dwindle soon due to the loss of millions of grassland acres now enrolled in the federal Conservation Reserve Program (CRP).
>
> CRP, which began in 1985, pays farmers to take highly erodible land out of crop production and plant it primarily to a mixture of grasses and forbs. The grasslands stabilize soil, reduce erosion, and provide rich wildlife habitat. Landowners sign up for ten-year contrcts during which they agree not to raise cros on the acres in return for annual payments.

[28] http://bo.stridsberg.googlepages.com/

[29] *CRP declines spell bad news for grassland birds,* Montana Outdoors, a publication of the State of Montana, Montana Fish, Wildlife, and Parks, page 5, Attachment 15 CRP declines spell bad news for grassland birds

> The program has ben credited with widespread improvements in soil retention, water quality, and wildlife popultions. "CRP helped create a tremendous recovery for waterfowl, upland game birds, and grassland nongame birds across the orthern Great plains over the past 20 years," says Jeff Jerbert, assistant chief of the FWP Wildlife Division. . . .
>
> As CRP contracts expire, however, may of those grassland tracts are being plowed up and put back into agricultural production. . .
>
> According to the U.S. Department of Ariculture (USDA) Farm Services Agency, which administers the program, Montana has lost over 300,000 CRP acres in the past two years. The agency estimates the state will see a total of 1 million acress expire by the end of 2011, one third of the acres enrolled in Montana. . . .
>
> Dave Nomsen, vice president of legislative affairs for Pheasants Forever, says CRP acreage will decline by another 12 million acres over the next three years, mostly in the Prairie Pothole Region stretching from north cetnral Montana to Iowa. . . .
>
> **Many farmers in the Midwest are pulling out of CRP because they are receiving higher prices for grain, especially corn. Increased demand for ethanol encourages growers to plow CRP grasslands as well as native prairie that may not have een worth planting in the past**.

California's modeling of ethanol impacts includes only a tiny portion of the increased greenhouse gases from tilling such marginal lands and fails to consider these other severe environmental impacts.

The University of California, Berkeley also recently submitted a comment letter to the US EPA[30] (attached) during federal proceedings on the underestimation of ethanol and other biofuel GHG emissions due lack of inclusion of large emissions from Land Use Change. This letter also found that greenhouse gas emissions due to indirect land use change caused by biofuels, especially corn ethanol will, by the best estimates they have, increase the global warming intensity of motor fuels nationally. The letter concluded that at best, if it changed its calculations, use of these fuels would only decrease GHGs a little, and would fail to meet minimal EPA standards for GHG reductions.

> We write to you in response to a series of letters and statements that argue for excluding indirect land use effects in the EPA's rulemaking for the Renewable Fuel Standard (RFS). As we explain below, **it is essential to include the best available scientific estimate of the full greenhouse gas consequences of biofuel production—including indirect land use change—as required by the Energy Independence and Security Act of 2007 (EISA).**
>
> EPA is required by EISA to ensure that different classes of biofuels achieve designated reductions in life cycle GHG emissions relative to those of gasoline in order to be counted under EISA's renewable fuel mandate. The Act specifically requires including significant GHG emissions resulting from land use change. The salience of this requirement lies in the size of current estimates of these indirect emissions: **added to typical direct emissions values, they indicate that substituting certain biofuels, especially corn ethanol, for gasoline will actually increase the global warming (GW)**

[30] Comment letter to Honorable Stephen Johnson, Administrator, United States Environmental Protection Agency, and The Honorable Ed Schafer, Secretary, United States Department of Agriculture, November 10, 2008, University of California, Berkeley, Schools of Public Policy and Energy and Resources, Professor O'Hare et al, http://biofuelsandclimate.files.wordpress.com/2008/11/ucberkeley_epa_letter.pdf, Attachment 16 ucberkeley_epa_letter Land Use Change impacts

intensity of motor fuel, or decrease it so little (depending on how it is calculated) that these biofuels would fail to meet EISA required GHG reductions.

In contrast to all of the above analysis that show large contributions in GHGs from Land Use Change, CARB's draft LCFS finds only a small contribution from Land Use Change in the following chart, excerpted from the previously cited Life Cycle Analysis for corn ethanol (Detailed California-Modified GREET Pathway for Denatured Corn Ethanol).

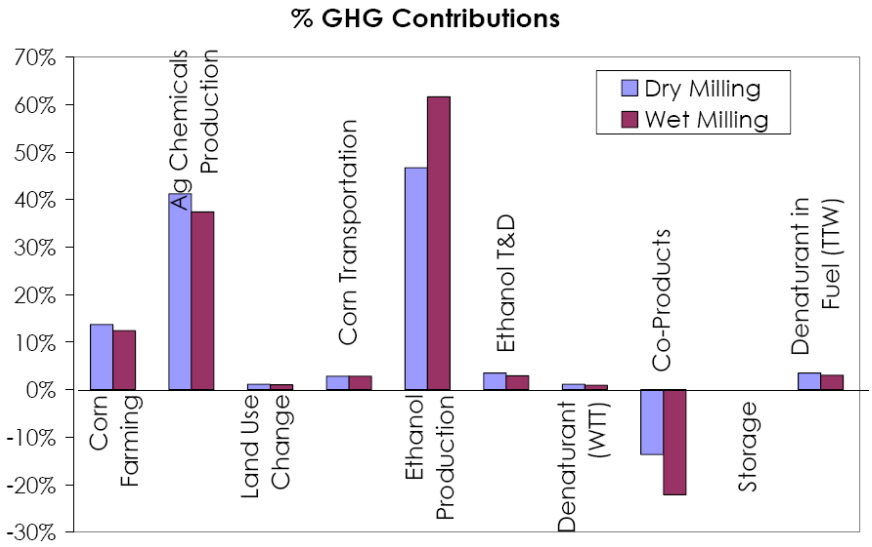

Figure 3. Percent GHG Contributions from Well-to-Wheel for Dry and Wet Mill Ethanol

It is absolutely essential that the Low Carbon Fuel Standard reflect correct estimates of Land Use Change impacts on GHG emissions due to corn ethanol and other biofuels. If not, the LCFS becomes a sham that will do harm.

SCAQMD found smog will increase due to adding ethanol to gasoline

SCAQMD regulates smog precursors in the Los Angeles region, which suffers the worst smog in the nation. SCAQMD has struggled for decades to reduce smog-precursors, and has made progress, but South Coast smog continues to severely impact people in the region, including many CBE members. Now ARB is mandating an increase in ethanol in gasoline, which is known to cause increased smog. Given the severe asthma epidemic, it is unbelievable that the ARB would allow the Low Carbon Fuel Standard to exacerbate smog by increasing smog precursor ethanol emissions, especially when this addition doesn't reduce GHG emissions. The increased ethanol emissions occur when ethanol permeates through vehicle seals and gaskets. This is a chemical oddity that occurs due to this mix of lower levels of ethanol with gasoline. At the March hearing, SCAQMD staff testified that gasoline would be cleaner without ethanol:[31]

[31] *Testimony of the South Coast Air Quality Management District on the ARB Staff Proposed Amendments to Phase 3 California Reformulated Gasoline Regulations, Presented at ARB Board Hearing,* SCAMQD, Paul Wuebben,

"…the cleanest gasoline with respect to ozone forming potential and NOx emissions is a formulation with 0% ethanol. "

SCAQMD staff also testified that ARB's peak ozone planning temperature is too low (87º F instead of 95º F), which underestimates smog formation, since smog precursors including ethanol react on hot days to form ground-level ozone (smog). Ethanol permeation emissions are much higher at higher temperatures.

> **Regarding permeation emissions, it is clear that HC [hydrocarbon] emissions are exponentially – not just linearly – related to temperature.** ARB staff proposes a temperature profile with a peak temperature of only 87º F for the Los Angeles County portion of the ozone planning inventory used in the model. This temperature assumption is inconsistent with the fact that last year the South Coast Air Basin experienced the highest number of consecutive days above 100 degrees on record. **We therefore recommend that ARB adjust the Los Angeles County inventory by raising its maximum temperature to at least 95 degrees.**

Unfortunately the recommendation to use a higher peak temperature design value in the modeling was not carried out, leaving ethanol's impacts on Los Angeles smog greatly underestimated.

SCAQMD comments[32] of June 2008 found other weaknesses undermining California Clean Fuels model validity:

> ***"The gross disparity between certification test fuel and the in-use fuel specification is a major weakness which directly affects the validity of the proposed update of the Predictive Model***.
>
> ***"We also know first hand the importance of your actions in addressing the serious potential air quality problems associated with low level blends of ethanol in gasoline. California is essentially at a tipping point with respect to such blends.*** *It is essential that the ARB ensure the fullest preservation of benefits possible relative to the Phase 2 gasoline baseline.* ***The Table below shows clearly that the cleanest gasoline with respect to ozone forming potential and NOx emissions is a formulation with 0% ethanol. As California moves to implement the LCFS, this comparison should not be forgotten.***
>
> ***In effect, this data suggests that a compromise is being struck to accommodate up to 10% ethanol blends.*** *For that reason,* ***it is imperative that the Board exercise the maximum precautionary principle possible with respect to low level blends of ethanol in gasoline***
>
> ***The judgments being made today will lock California into such blends for decades. This sobering reality should reinforce the Board's sense of caution with the revisions being made today.*** *The modifications recommended by the AQMD staff are carefully designed to be fully consistent with the goals of the upcoming LCFS while also ensuring the full retention of ozone benefits*

All of the observations described above demonstrate that not only does ethanol use increase the already-severe public health hazard of smog, but that the planning and modeling greatly underestimate impacts on smog.

Clean Fuels Officer, SCAQMD, June 14, 2007, Fresno, CA, (3rd unnumbered page, footnote), http://www.arb.ca.gov/lists/carfg07/50-carfg07-ws-1.pdf , Attachment 17 50-carfg07-ws-1 Wuebben June 14 07

[32] Comments of the South Coast Air Quality Management District on the ARB Staff Proposed Amendments to Phase 3 California Reformulated Gasoline Regulations, SCAQMD, June 13, 2008 (only on 15-day proposed revisions after rule was already adopted) http://www.arb.ca.gov/lists/carfg07/47-carfg07-7.pdf , Attachment 18 47-carfg07-7 Wuebben June 13 08

B. Dirty crude oil refinery inputs are increasing and not addressed

At the same time that California has set a goal of lowering carbon content of transportation fuels by 10%, oil refineries in the state have been investing many millions of dollars converting their equipment to enable refining of higher carbon crude oil. This builds into the state infrastructure for the coming decades much higher GHG emissions from oil refining, rather than investing in a cleaner future. The draft LCFS fails to directly address this major problem (and the Scoping Plan also fails to address it within the Industrial/Refinery sector). In fact LCFS builds in ways to avoid assessing this problem.

The comments below constitute only a portion of our comments on this issue. CBE is submitting a separate report on the switch to dirtier crude oils in the state, on the major unabated increase in GHGs due to this switch, and associated increased hazardous sulfur content of the crude. CBE submitted an assessment to CARB over a year ago, of a partial list of heavy crude projects with hydrogen plants, showing a large increase in GHGs associated with the switch to heavy crude for just this subset of projects (about 6 million tons/year, which we now know is an underestimate of increases). We also asked that CARB broaden and refine the analysis. Since the state did not carry out an analysis, our separate report provides a statewide assessment, and shows huge GHG increases in the sector, up to 13MMTCO2e from refinery hydrogen plant steam methane reforming alone, from 2008 to 2020. This does not include other major energy increases at oil refineries due to this switch. The GHG increase at refineries is due to the need for much more hydrogen used by heavy, high sulfur crude refining, for hydrocracking, hydrotreating, etc. This hydrogen is produced by fossil fuels and very energy-intensive to produce. Please refer to this report, submitted separately.

This analysis also shows the continuing increase in sulfur content within the refinery due to this heavier, dirtier crude switch. Consequently, there will be higher concentrations of hazardous hydrogen sulfide and other sulfurous gases within California refineries, increasing hazards to neighbors and workers. This trend of higher energy use and more contaminated processing needs to be evaluated under AB32 as part of the public health analysis, as an issue of co-pollutants generated due to fossil fuel use at refineries, as well as under section Health & Safety Code § 38570 (before allowing market based mechanisms, ARB must consider, among other things, localized impacts in EJ areas and must be designed so as not to increase TAC emissions and criteria pollutants). (Co-pollutants of heavy crude oil also include heavy metals.) This is a grave matter of Environmental Justice as sulfur content at refineries translates to emissions that have severe impacts on people with asthma and other breathing problems, and heavy metals which include carcinogens and neurotoxins.

LCFS is proposing a future baseline, decreasing the original 10% low carbon reduction

LCFS sets a future baseline year for carbon content of 2010, despite the fact that the 2007 Technical Analysis for ARB out of UC Berkeley and UC Davis (*"A Low Carbon Fuel Standard for California, Part 1: Technical Analysis,"* Farrell and Sperling[33] page 25) recommended using the most recent year before the regulatory development, and specifically not a future year such as 2010.

[33] August, 2007, Project Directors, Alexander E. Farrell, UC Berkeley, Daniel Sperling, UC Davis, http://steps.its.ucdavis.edu/publications/2007pubs/stepspubs_its/FarrellSperlingLCFS1.pdf , Attachment 19 FarrellSperlingLCFS1

> **In 2005, we calculate the AFCI for the pool of gasoline fuels in California to be 87.9 gCO_2e/MJ.** (The calculation of this value is explained in Section 2.4) The gasoline in this calculation includes 5.7% ethanol, and an average value for Midwest corn-ethanol production is assumed, using values developed for the CEC (Unnasch et al. 2007). We assume that this is the value to which any LCFS percentage reduction is applied (as opposed to using a forecasted value for 2010 or some other baseline future). Thus, the 2020 goal of a 10% reduction by 2020 implies an AFCI value of 82.9 by that date.

Since carbon content of crude is getting higher, setting a <u>future</u> baseline instead of the normal procedure of using a recent past baseline, builds a starting point into LCFS with higher carbon content, reducing LCFS effectiveness. The purpose of setting a baseline in this case was to reduce emissions from current use. Artificially starting in the future when emissions will be higher, is simply a means of lowering the original goal of 10% reduction in carbon content for LCFS.

The 2010 baseline, which has a baseline of just over 96 gCO2e/MJ for gasoline and just under that for diesel, starts at a higher carbon intensity <u>and ends at higher carbon intensity</u> at about 86 g CO2e/MJ in 2010 for gasoline and diesel. If the UC recommendation was used, the end point for LCFS would be 82.9 gCO2e/MJ, as stated in the excerpt above. The LCFS draft is almost 4% higher than the endpoint assumed in the UC Berkeley Technical Analysis, meaning that the new draft will only get a nominal 6% LCFS reduction, not 10% (without considering the other problems that undermine LCFS reductions). **The 2010 baseline is another point of weakening the originally proposed LCFS standard and should be modified in the Scoping Plan.**

Crude oil definitions in LCFS are also problematic

The LCFS crude oil definition allows high carbon crude oils to be treated like low carbon crude. The draft LCFS only separates crude oil into two categories -- conventional crude oil and non-conventional crude oil (such as heavy Canadian tar sands crude oil which takes much more refining and energy to turn into gasoline and diesel, as well as heavy impacts in Canada during production).

> **95427. Definitions**
>
> "Crude Oil"
>
> "Conventional crude oil" means a crude oil produced by a primary, secondary, or tertiary oil recovery process.
>
> "Non-conventional crude oil" means a crude oil produced from oil sands, tarsands, oil shale, or processes such as gas-to-liquid (GTL) and coal-to-liquid (CTL).
>
> **Section 95425. Determination of Carbon Intensity Values**
>
> (C) *Conventional Fuels.*
>
> 1. For conventional fuels (gasoline (including CARBOB) and diesel fuel) derived from conventional crude oil, the regulated party must use the average fuel-pathway carbon-intensity value for that fuel derived from the California-modified GREET ("conventional crude CI").

This definition fails to acknowledge that there are many high carbon crude oils not described by the non-conventional crude oil definition. These crudes would be considered conventional according to the LCFS definition, even though they are just as high carbon and require as much energy to refine as Canada tar sands crude.

For example, Venezuelan crude is a heavy, sour crude oil used in the U.S. and comparable to Canadian tar sands crude[34, 35] in API gravity (a measure of how heavy the crude oil is). The heavier the crude oil, the higher the carbon intensity. Under the LCFS definition, oil refineries in the state of California can continue their destructive switches to heavier crude oil without accounting for the higher carbon inputs, as long as these are not labeled by name as oil sands, tar sands, oil shale, gas-to-liquid, or coal-to-liquid crudes. There is no quantitative definition in the LCFS for separating crudes by API gravity; LCFS only separates them by applying names that are not comprehensive for identifying heavy crude. These higher carbon crude oils are also more contaminated with sulfur and heavy metals.

The definitions for non-conventional crude oils also allow complex "rebuttable" assumptions about carbon content. For example, these definitions allow non-conventional crude to use conventional crude average carbon values if the non-conventional crude is calculated within 10% of conventional crude values. This adds one more layer of hedging on actual GHG impacts, which in combination with major inaccuracies present in carbon trading and inaccuracies in calculating ethanol inputs further undermines the chances of LCFS' effectiveness.

Exemptions from LCFS are given for Hydrogen even when it is made from fossil fuels

The draft LCFS defines alternative fuels as follows, including hydrogen:

> "Alternative fuels" collectively refers to natural gas (CNG, LNG, biomethane), LPG, electricity, **hydrogen,** an ethanol blend, a biomass-based-diesel blend, B100, and E100. (page 33)

The LCFS Applicability of Standards section provides an exemption for volumes of alternative /fuels below

> **(b)** ***Exemption for Alternative Fuels Distributed in Low Volumes for Transportation Uses.***
>
> (1) The LCFS regulation does not apply to an exempted regulated party providing in a calendar year a transportation alternative fuel – other than a biofuel –that is supplied in California by all parties for transportation use at an aggregated volume of less than 420 million MJ (3.6 million gasoline gallon equivalent) per year. (page 1)

This definition and exemption is very problematic, since, for example, most of the hydrogen currently produced in the state is made from fossil fuels at oil refineries. The LCFS justifies this exemption on the basis that it will encourage small producers of alternative fuels: xxx citexx

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[34] *Comparing Venezuelan and Canadian Heavy Oil and Tar Sands,* Petroleum Society, Canadian Institute of Mining, Metallurgy, and Petroleum, page 2, http://www.energy.gov.ab.ca/OilSands/pdfs/RPT_Chops_app3.pdf , Attachment 20 comparing Venez and Canada crude

[35] *Impacts of the Venezuelan Crude Oil Production Loss,* U.S. Energy Information Administration (EIA), Joanne Shore and John Hackworth, http://www.eia.doe.gov/pub/oil_gas/petroleum/feature_articles/2003/venezuelan/vzimpacts.pdf , Attachment 21 vzimpacts

> The exemption from the LCFS is intended to allow alternative fuel providers, particularly small-volume producers whose fuels have inherently low carbon intensities, adequate lead-time to develop the technologies necessary to make their fuels viable for future transportation applications. In the implementation of the LCFS, the exemption could apply to hydrogen, electricity, liquefied propane gas, and other fuels under research and development.

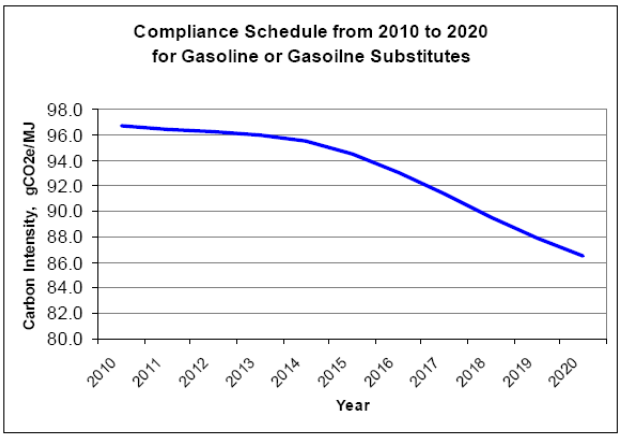
This is not correct in the case of hydrogen, which is not inherently low carbon as described above when produced by fossil fuels. In fact, new oil refinery hydrogen plants are project to emit over 1 million metric tons per year of CO2. Unfortunately this exemption doesn't ban large producers such as oil refineries which make hydrogen from fossil fuels to use this exemption. This would be easy to fix simply by removing the exemption for fossil-fuel generated hydrogen, and for large industrial polluters from using this exemption. Such entities must be held accountable for GHG emissions and local co-pollutants caused by the energy-intensive production of fossil-fuel generated hydrogen.

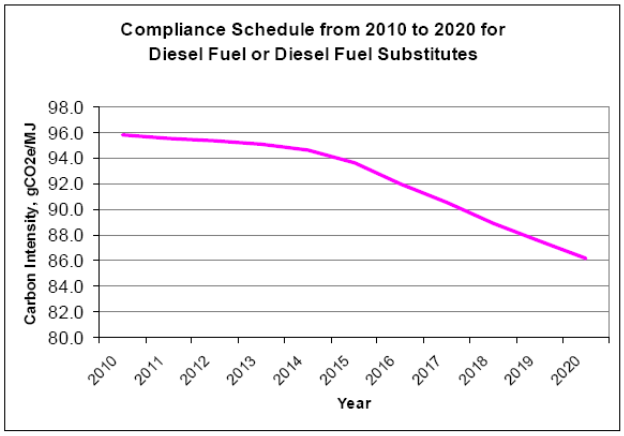
C. Other problems with LCFS

Potential for dieselization of California's fuels, and omission of black carbon

The following charts on greenhouse gas emissions taken from the draft LCFS show the curve for diesel at slightly lower carbon content than gasoline. This means that if CARB decides to combine diesel and gasoline together into one compliance path instead of having separate standards for each, then California refineries could increase diesel production and reduce gasoline production as a strategy for complying with LCFS, without actually making any progress in lowering carbon within diesel or gasoline production. Apparently CARB has been considering the possibility of requiring only one total LCFS standard for the combination of gasoline and diesel together. This would have terrible consequences, both in terms of making actual progress toward reducing greenhouse gases, and in terms of the need to <u>reduce</u> diesel use and its very harmful health impacts.

→ Keep the dual paths of separate LCFS standards for gasoline and diesel, and account for black carbon GHG emissions from diesel fuel and other sources





Furthermore, since LCFS also doesn't take into account black carbon (a major greenhouse gas emitted by diesel combustion[36]) dieselization of California's fuels would not only be bad for public health, but would increase this source of GHGs. It appears that the Diesel Fuel curve above does not include the impacts of black carbon emissions on climate change, setting up a bias towards diesel.

IV. Remove methane exemptions from smog regulations for <u>all sources</u> and <u>do not allow trading</u>

ARB only accepted our recommendation removing the exemptions for a tiny portion of <u>refinery VOC regulations</u> in the Proposed Scoping Plan as a complementary measure to the cap-and-trade program.

The definition of VOCs (Volatile Organic Compounds) in smog precursor control regulations exempts methane in most cases. The following examples of regulations in different regions in the state include the SCAQMD, the BAAQMD, and the SJVAPD.

> <u>SCAQMD</u>:[37]
>
> **VOLATILE ORGANIC COMPOUND (VOC) is any volatile compound of carbon, excluding methane,** carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and exempt compounds.
>
> ORGANIC MATERIAL means a chemical compound of carbon excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides, metallic carbonates and ammonium carbonate.
>
> <u>BAAQMD</u>:[38]
>
> **1-233 Organic Compound: Any compound of carbon, excluding methane**, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate.
>
> **1-235 Organic Compound, Precursor: Any organic compound as defined in 1-233** excepting the non-precursor organic compounds, 1-234. *(Adopted March 17, 1982)*
>
> **1-236 Volatile Organic Compound (VOC): Any organic compound, as described in Section 1-233,** which would be emitted during use, processing, application, curing or drying of a solvent, surface coating, or other material. *(Adopted October 19, 1983)*
>
> <u>SJVUAPCD</u>:[39]
>
> 3.53 **Volatile Organic Compound (VOC):** any compound containing at least one (1) atom of carbon **except for the following exempt compounds:**

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[36] *Black Carbon Playing a Major Role in Arctic Climate Change* - SciencePoles – The Scientific Website of the International Polar Foundation, http://www.sciencepoles.org/index.php?/articles/&uid=1253 , *Testimony for the Hearing on Black Carbon and Arctic House Committee on Ovesight and Government Reform, United States House of Representatives, The Honorable Henry A. Waxman, Chair*, but Dr. Mark Z. Jacobsen, Professor of Civil & Environmental Engineering, Standard University Atmosphere/Energy Program, October 18, 2007, http://oversight.house.gov/documents/20071018110606.pdf Attachment 22 Black Carbon Playing Major Role Arctic Climate Change - SciencePoles

[37] *SCAQMD Regulation 1, General Provisions, Rule 102, Definition of Terms (Amended Dec 3, 2004)*

[38] *BAAQMD Regulation 1 General Provisions and Definitions (Adopted March 17, 1982)*

[39] *SJVUAPCD Rule 1020, Definitions*, 6/17/99

• **Methane** *[Many other compounds which are non-smog precursors are also listed as exempt.]*

Removal of methane exemptions for all industrial sources is an effective strategy to reduce greenhouse gases and for improving air quality. In fact, ARB should remove these exemptions for every source in the state. Methane is 23 times more potent than CO_2, and is also a key smog precursor (for ground-level ozone), and its reduction is highly effective in reducing smog. A Harvard study (Fiore, *et al*.,) found that when methane decreases, global concentrations of background ozone decreases and surface air quality improve everywhere[40]:

> Methane (CH4) emission controls are found to be a powerful lever for reducing both global warming and air pollution via decreases in background tropospheric ozone (O3).

This study was summarized as follows in Environmental Science and Technology[41]:

> "Aggressive efforts to improve urban air quality could be undermined by rising levels of methane, a compound more closely linked to global warming than air pollution. Using a global model of tropospheric chemistry, researchers at Harvard University, Argonne National Laboratory, and the U.S. EPA determined that higher methane levels could increase ozone background levels worldwide, lead to a greater frequency of days with high ozone levels in the summer, and produce a longer "season of ozone pollution days."
>
> "It is already known that methane is a major source of worldwide tropospheric ozone background concentrations, and this study supports that finding. However, **the surprise is that a 50% reduction in anthropogenic methane in their scenario is as effective as a 50% drop in anthropogenic NOx concentrations at lowering summer afternoon ozone levels over the United States."** (page 452A)

NOAA (National Oceanic and Atmospheric Administration) also found:[42]

> An important area of research at GFDL is investigating the contribution of methane to surface ozone pollution, and quantifying the potential benefits to air quality and climate from controls on methane emissions. **Methane is both a greenhouse gas and an important contributor to background levels of ozone. Tropospheric ozone, a significant greenhouse gas and the primary constituent of photochemical smog, provides an obvious link between air quality and climate.**

Controlling emissions of methane will effectively reduce smog and provide public health benefits. In a study by West, *et al.*, reducing global methane emissions by 20% would make significant reductions in surface ozone globally consequently **preventing approximately 370,000 premature all-cause mortalities** globally between 2010 and 2030 and resulting in a

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[40] Fiore, Arlene M., Daniel J. Jacob, Brendan D. Field, David G. Streets, Suneeta D. Fernandes, Carey Jang. 2002. Linking ozone pollution and climate change: The case for controlling methane. Geophysical Research Letters. http://www.agu.org/pubs/crossref/2002/2002GL015601.shtml Attachment 23 fiore2002a on Methane control

[41] Environmental Science & Technology. December 2002, http://pubs.acs.org/subscribe/journals/esthagw/2002/oct/science/an_methanelink.html

[42] Linking climate and air pollution: Methane emission controls yield a double dividend. http://www.research.noaa.gov/spotlite/2006/spot_methane.html Attachment 24 Link climate air pollution Methane controls double div

marginal cost-effectiveness of **approximately $420,000 per avoided mortality.**[43] Methane abatement is a global issue and the benefits of controlling methane will be reaped both in polluted regions as well as in rural regions.

There is a significant missed opportunity by only including removal of fugitive methane exemptions in most refinery Volatile Organic Compounds (VOC) regulations. The Proposed Scoping Plan states that removal of methane exemption from existing refinery regulations results in a reduction of approximately 0.01 $MMTCO_2E$. There are other opportunities of recovery of fugitive methane including manufacturing and other industrial sources, which could add up to almost an approximately 2.5 $MMTCO_2E$ reduction in 2004 according to the draft GHG Inventory (See Excel spreadsheet 'fug CH4'), although this is likely an underestimate since methane's exempt status means that it is not a high priority for quantification.

Furthermore, removal of the methane exemption across the board would show VOC regulations are more effective at reducing smog precursors and are more cost-effective than it appears because of the added public health benefits. To begin to quantify methane as identified in regional air quality plans in criteria pollutant emissions categories, an excerpt of California's 2002 statewide criteria inventory summary table from ARB is excerpted below. This table includes organic compound emissions in both TOG (Total Organic Gases) and VOCs (Volatile Organic Compounds)/ ROGs.[44, 45]

2002 Statewide Inventory: Table 2-1 Summary (tons per day)

Division Major Category	TOG	ROG
Stationary Sources	2535	538
Fuel Combustion	215	49
Waste Disposal	1447	23
Cleaning And Surface Coatings	344	237
Petroleum Production And Marketing	450	164
Industrial Processes	79	65
Area-Wide Sources	2027	698
Solvent Evaporation	521	463
Miscellaneous Processes	1506	235
Mobile Sources	1530	1406
On-Road Motor Vehicles	1019	938
Other Mobile Sources	511	467
Natural Sources**	106	38
Total Statewide - All Sources	***6198***	***2680***

For example, three categories of Stationary Sources listed above (Fuel Combustion, Petroleum Production and Marketing, and Industrial Processes) add up to 744 ton per day (tpd)

[43] West, Jason J., Arlene M. Fiore, Larry W. Horowitz, and Denise L. Mauzerall. 2006. Global health benefits of mitigating ozone pollution with methane emission controls. Proceedings of the National Academy of Sciences of the United States. 103 (11): 3988-3993. http://www.pnas.org/content/103/11/3988.full.pdf+html , Attachment 25 Global health benefits mitig ozone pollution

[44] The year 2002 was chosen because it is the latest year that included both TOG and VOCs. Later inventory years did not provide TOG, but just VOCs.

[45] *The 2003 California Almanac of Emissions and Air Quality*, page 49, http://www.arb.ca.gov/aqd/almanac/almanac03/pdf/chap203.pdf , Attachment 26 03 Cal Almanac Emissions Air Quality chap203

TOG and 278 tpd VOC, and the difference between these two – includes exempt organic gases, and is likely to be made up **mostly of methane** – is 466 tons per day. This is about 170,000 tons per year. If the difference is entirely methane, this is equivalent to **almost 4 million US tons per year CO_2Eq** just for these categories.[46] This category of stationary source methane emissions is a significant source of GHGs, and also a huge source of unregulated smog precursors from only these three categories of sources.

We strongly urge CARB to expand the removal of exemptions for methane to include all refinery sources and all industrial sources by requiring all regional air quality agencies in California to immediately begin reopening all smog regulations to remove methane exemptions, and to complete this by the most expeditious date. Furthermore, all new smog regulatory proceedings in the state should be immediately required to include evaluation of removal of methane for each of these regulations.

> Additionally, these reductions should be not be included in a cap-and-trade program. The plan states: The WCI program design for the cap-and-trade program includes fugitive methane emissions to the extent that adequate quantification methods exist. During implementation of this measure, ARB will determine whether these emissions will also be covered in California's cap-and-trade program. If the emissions are covered under the cap, ARB will evaluate the need for the measures described here. (Appendix 1, p. C-151)

This measure must be excluded from the cap-and-trade program to ensure a basis of GHG reductions and co-benefits in refineries communities.

[46] This number is likely underestimated since exempt methane emissions receive less scrutiny.

V. Complex and toxic Oil Refineries and Industrial Sources need direct regulation to avoid major GHG increases & EJ impacts – Scoping includes almost none

Wilmington Statistics

	Wilmington	L.A.
Hispanic or Latino (of any race)	84.6%	44.6%
Median household income (dollars)	$30,259	$42,189
Per capita income (dollars)	$11,600	$20,683
Individuals below the poverty level	27.2%	17.9%

Source: U.S. Census Bureau 2000, Summary File 1 (SF1) and Summary File 3 (SF3)

Photo shows close proximity of neighbors to oil refineries in Southern California, also true in Northern California

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Oil refineries represent a major health risk to neighbors and are the most energy-intensive industry in California and the country. **It is shocking that this major sector and public health hazard, which directly emits about 10% of the state's GHG emissions and is responsible for 40% more emissions from transportation sources, has almost zero tons of GHG reductions in the Scoping Plan.**

Table 16: Industrial Emissions Recommendation
($MMTCO_2E$ in 2020)

Measure No.	Measure Description	Reductions
I-1	Energy Efficiency and Co-Benefits Audits for Large Industrial Sources	TBD
I-2	Oil and Gas Extraction GHG Emissions Reduction	0.2
I-3	GHG Leak Reduction from Oil and Gas Transmission	0.9
I-4	Refinery Flare Recovery Process Improvements	0.33
I-5	Removal of Methane Exemption from Existing Refinery Regulations	0.01
	Total	**1.4**

Furthermore, the entire Industrial sector has almost no reductions in the Plan. The total reductions comes to only 0.34 MMTCO2E out of about 100 MMTCO2E total (when the small reductions for oil and gas drilling and transmission are subtracted). Even with these included,

the total comes to only 1.4 MMTCO2E. This paltry sum must be augmented in order to have a successful plan, especially given the major increases in GHG from oil refineries that are continung. **Also see our comments above in the Low Carbon Fuel Standard section, regarding the switch to dirtier crude oil in the state's refineries, that is drastically increasing GHG emissions and co-pollutant contaminants onsite at refineries.**

CBE has provided detailed comments on many opportunities for GHG reductions in the oil refinery sector, but these are almost completely missing from the Scoping Plan. **Please also see our full detailed technical comments, attached again, which went mostly unaddressed.** We add additional comments within this letter. Directly below is a brief summary of our earlier recommendations as they were summarized and included in the EJAC recommendations of October 1, 2008 to ARB, which have not been addressed.

Summary of our earlier Refinery Comments, included in EJAC Recommendation to CARB

General Policy Recommendations for Oil Refineries and Industrial Sector:

- Re-iterate and implement ARB's goal to maximize co-pollutant reductions for all Industrial Sources including oil refineries
- Prioritize direct, local control (not pollution trading) GHG sources where co-pollutants are significant (including refineries and industrial sources.) Do not relegate EJ policy implementation to after-the fact mitigation in lieu of pro-active pollution prevention from industrial sources.
- Remove oil refineries, which emit smog precursors and toxic chemicals locally, from eligibility in participating in a Cap-and-Trade and offsets program, which allows offsite trades of pollution reduction. Likewise apply this policy to all Industrial sources which emit smog precursors and toxic chemicals.
- Hold public meetings on refineries and separately on other industrial sectors to evaluate options for direct controls in detail prior to ARB Board review of the Scoping Plan.
- Require that energy audits, other evaluations, and data required to be carried out by the Plan be housed at ARB and available to the public, subject to normal ARB business confidentiality requirements.

Specific Measure Recommendations for Oil Refineries and Industrial Sector:

- Insert a GHG emission reduction target of at least 33% for Industrial Sources and separately at least 33% for Oil Refineries by 2020 since the Scoping Plan currently includes a commitment for zero tons of reduction from oil refineries and for all industrial sources. This is similar to the Renewable Portfolio Standard 33% target for power plants by 2020. (Oil refineries GHG emissions are about equal to in-state Power Plant emissions according to the PUC.)
- Include all oil refineries in the recommended Energy Efficiency Audits for Large Industrial Sources measure of Table 2, (currently many refineries are not included) and add a 33% fossil-fuel energy use reduction target and expeditious deadlines.

- Move refinery measures out of "Other Measures Under Evaluation" and into the "Recommended Greenhouse Gas Reduction Measures" of Table 2 of the Scoping Plan, insert deadlines, and emissions reductions targets. Also expand the following measures:
    - In addition to a requirement for replacing old heaters and boilers, add a requirement for 20% solar-assist pre-heating for refinery boilers
    - Separate flare controls into a stand-alone measure, require sufficient gas recovery capacity, redundancy, monitoring, and Flare Minimization procedures to eliminate non-emergency flaring
    - Add a ban on venting of Pressure Relief Devices to Atmosphere and ensure that this does not increase flaring
    - Add to the refinery energy efficiency list on page C-109 a requirement to evaluate all sources within refineries and identify options for reductions
    - Expand the removal of exemptions for methane which is currently allowed throughout smog regulations statewide, to include all oil refinery sources, all industrial sources, and all sources, instead of the small subset now included in the plan. Currently only a small fraction of refinery sources is included in the Scoping Plan, compared to the large potential for methane reductions. There is no longer any excuse for such exemptions. Removal of the exemptions can be mandated by ARB to be carried out by every air district in the state, as regulations are modified, with further requirements to expedite the largest sources.
- Add a requirement for refineries to eliminate their large fossil-fuel grid electricity use and switch to clean renewable energy.
- Evaluate emissions and pollution prevention options for the following:
    - Stopping oil refinery switches to heavy, high-carbon crude oil which are causing large GHG emissions and local impacts, since these refinery activities are causing such large emissions increases so as to dwarf other efforts to reduce refinery emissions.
    - Options to reduce refinery product demand over time by 33% by 2020, through clean transportation and public transit measures. Reducing demand for oil refinery production over time is inherently connected to making progress in reducing transportation emissions through phasing in clean alternatives. These measure should include evaluation of fuel conservation standards, funding options for local public transit, especially clean energy metropolitan bus systems, in addition to infrastructure and plug in hybrid production requirements, bicycle transit infrastructure, and funding other clean alternative fuels and measures.

In addition to the comments above, we are separately submitting a report on the GHG emissions increase due to the switch by oil refiners to heavy crude oil. We also have the following additional comments below.

Complex and toxic oil refineries are terrible candidates for Cap & Trade, inappropriately lumped for trading with unlike sources of Commercial, Residential, & Electrical

We have been told that we should look to Cap and Trade to achieve the reductions from the Industrial Sector instead of seeking direct controls, but even if these reductions could reliably and enforceably be counted on to occur, they would be outside the state or the country. These achieve no local reductions in California where we can confirm them, and where they will reduce local toxic emissions and smog precursors.

The only example of cap and trade that has worked to any degree in the past was the trading among extremely homogeneous power plants in the eastern U.S to reduce acid rain. In contrast, the AB32 Scoping Plan proposes trading between completely different emissions sources of oil refineries, other industrial sources, commercial, residential, and electrical sources.

Such a complex system yet vaguely defined system has no hope of finding equivalent emissions trades. To start, the emissions for each of the thousands of pieces of polluting equipment within oil refineries are frequently poorly monitored. Only a small subset has continuous emission monitoring for a particular pollutant. Reliably accurate baseline data is frequently unavailable. Baseline emissions data for each of the many types of oil refinery equipment are so controversial, they are often contested by regulatory agencies, by industry, and by the public during permitting and regulatory processes. This problem with baselines is particularly difficult for oil refineries, because of their high complexity and high level of customization.

No refinery is exactly like another. Many components within refineries are many decades old. A source with the same name as one in another refinery can vary drastically in emissions, maintenance, and internal process specifics. Refinery design is highly dependent on the individual refinery business plan, and many design parameters are kept trade secret.

Finding the right baseline, averaged over the right period, and considering disputed emissions factors and monitored data, for even one processing unit, is not trivial. To multiply this complexity by the hundreds of units within one refinery, then to the total of all refineries which also emit hundreds of varying toxic co-pollutants in addition to GHGs, then to try to set up equivalent trades with commercial, residential, and electrical sources and other industrial sources across international regions, is nothing short of ridiculous.

These multiplying inaccuracies in super-sector Cap and Trade disappear when direct control is applied, because with pollution prevention, you simply require best available control technology or entirely replace fossil fuel sources with alternative energy. There is no need with direct control to attempt to find equivalent trades across complex, disparate sources. There is no need to identify the exact amount of each GHG and each toxic co-pollutant.

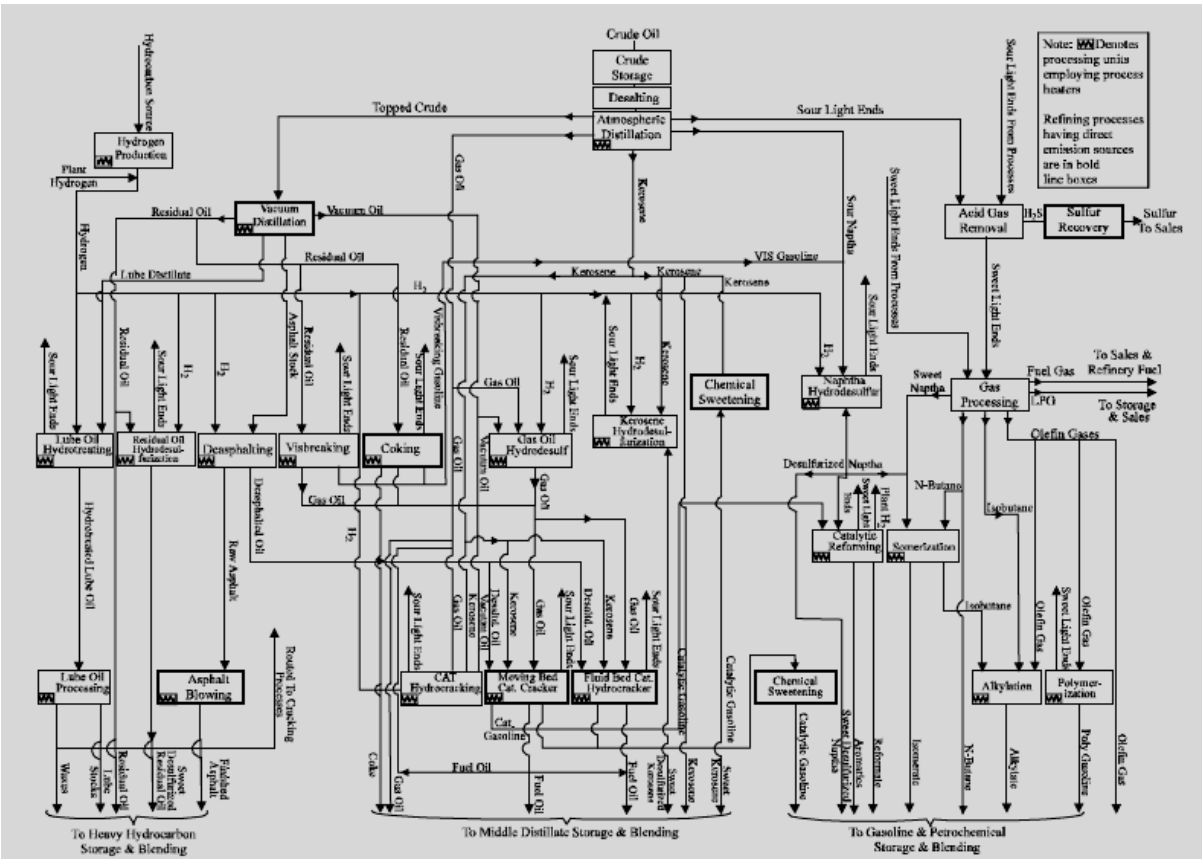
In order to briefly illustrate the many different components within oil refineries, we provide the following lists and diagram of oil refinery equipment:

Refineries are complex, customized, toxic, & terrible candidates for Cap & Trade

Short list of some oil refinery emissions sources, processing units, and sub-types as example

*Refinery sources emit **greenhouse gases** (CO2, black carbon, N2O, methane), **smog precursors** (VOCs, CO, NOx, SOx, PM2.5, PM10) and **hundreds of toxics** (H2S, ammonia, sulfuric acid, dioxins, mercury, lead, hexane, benzene, toluene, xylene, carbon disulfide, Polycyclic Aromatic Hydrocarbons, and many more.)*

• Boilers, Heaters, Steam generators (gas, fuel oil, coke-fired) • Storage Tanks (fixed roof, internal floating roof tanks, external floating roof tanks, pressure tanks) varying materials stored (crude oil, gasoline, intermediate refinery feedstocks, sour water, and many more), • Tank fugitive sources: seals, hatches, pressure/vacuum • Tank sludge cleaning • Open wastewater ponds with hydrocarbon materials, closed wastewater ponds, Cooling towers • Valves, flanges, pumps, compressors • Flares, Atmospheric, controlled Pressure Relief valves, by-pass valves • Fuel Gas Recovery Systems • Compressors - varying capacity • Blowdown systems controlled, uncontrolled	• Atmospheric Distillation Units • Vacuum Distillation • Fluid catalytic crackers • Hydrocrackers • Alkylation units • Isomerization Units • Reforming Units • Fluid cokers • Delayed cokers • Hydrogen Plants • Desulfurization units • Sulfur Recovery Units (Claus, Bevon-Stretford units) • SRU tail gas units



We compiled the following from ARB data which also shows refineries have many varying activities, fuels, and different greenhouse gases. This data also showed an increase of 6.3% CO2 equivalent from 1990-2004, though our analysis shows higher increases in the future.

Petroleum Refinining GHG Emission Inventory Summary Main Sector: Industrial, million tones CO2Eq

Main Activity	Activity Subset	GHG	1990	2004
Fuel combustion	Catalyst Coke	**N2O**	0.011	0.013
Fuel combustion	Refinery Gas	N2O	0.008	0.007
Fuel combustion	Natural Gas	N2O	0.003	0.004
Fuel combustion	Petroleum Coke	N2O	0.001	0.001
Fuel combustion	Refinery Gas	**CO2**	15.82	15.23
Fuel combustion	Natural Gas	CO2	4.305	6.835
Fuel combustion	Catalyst Coke	CO2	5.147	6.096
Fuel consumption	Refinery Gas	CO2	2.1	2.667
Fuel consumption	Natural Gas	CO2	2.1	2.66
Fuel combustion	Petroleum Coke	CO2	0.597	0.515
Fuel combustion	LPG	CO2	0.858	0.395
Fuel consumption	Naphtha	CO2	0.416	0.227
Fuel consumption	Natural Gas Liquids	CO2	0.275	0.185
Fuel combustion	Distillate	CO2	0.004	0.002
Fuel combustion	Residual Fuel Oil	CO2	0.212	0
Fuel combustion	Associated gas	CO2	0.655	0
Fuel consumption	Residual Fuel Oil	CO2	0.154	0
Fugitive emissions	NA	**CH4**	0.137	0.016
Fugitive emissions	NA	CH4	0.002	0.013
Fugitive emissions	NA	CH4	0.002	0.001
Fuel combustion	Refinery Gas	CH4	0.005	0.005
Fuel combustion	Catalyst Coke	CH4	0.004	0.004
Fuel combustion	Natural Gas	CH4	0.002	0.003
	Total		**32.8**	**34.9**

We also aggregated refinery criteria emissions from CARB statewide data (although we believe the data is underestimated). The chart illustrates variation of individual refinery sources, where certain criteria pollutants are present in some cases and not in others.

California Statewide Refinery Emissions 2004

		TOG	ROG	CO	NOX	SOX	PM
FUGITIVES	TPY	3218.3	2628.3	0.2	0.2	2.9	1.6
TANKS	TPY	2186.5	2106.6	0.0	0.0	0.0	0.0
HEATERS	TPY	559.3	362.9	2514.7	4114.7	1395.1	1024.6
BOILERS	TPY	349.0	230.2	799.6	2606.9	1437.4	230.7
TANK CAR LOADING	TPY	415.3	409.3	0.0	0.0	0.0	0.0
MARINE VESSELS	TPY	94.0	92.6	0.0	0.0	0.0	0.0
TOTAL ALL (Some not shown)	TPY	**9793.7**	**7802.7**	**10101.6**	**11715.8**	**20304.9**	**3115.5**

TOG=Total Organic Gases, **ROG** = Reactive Organic Gases, **CO**= Carbon Monoxide, **NOX**= Nitrogen Oxides, **SOX**= Sulfur Oxides, **PM**= Particulate Matter, TPY = Tons Per Year

Increased CHP Generation needs strict controls – Oil Refineries CHP could replace clean alternative energy if not restricted

Oil refineries are a large source of cogeneration in the state, but there is still a great potential for capturing waste heat and other waste at oil refineries in order to increase efficiency.

> **5.10 Power Generation**
>
> The petroleum refining industry is one of the largest users of cogeneration or Combined Heat and Power production (CHP) in the country. **The petroleum refining industry is also identified as one of the industries with the largest potential for increased application of CHP. We estimate installed CHP capacity in Californian refineries at at least 1400 MWe.**[4]

Cogeneration has the potential to capture waste energy and increase refinery efficiency, but since it introduces complex interactions with electric Power Plants and since it can itself result in large environmental impacts, cogeneration at refineries must be considered with extreme care is needed in evaluating the relative efficiency with other sources, as well as any environmental impacts. The key is to capture waste at refineries without introducing new sources of combustion or displacing clean alternative energy sources and otherwise increasing environmental impacts. BACT standards must be in place, and an eye to ensuring that California's overall energy policy does not favor oil refinery expansions.

If held within strict standards, reducing the need at refineries for grid electricity can not only reduce energy waste, but increase reliability of electric power available to the refinery. This reduces risk of power outages which often cause emergency refinery shutdowns with major air pollution emissions resulting. Power plant outages and emergency shutdowns at refineries have caused major flaring, resulting in GHG emissions and major local impacts from hydrocarbon, SOx emissions, and very large plumes of black smoke (particulate matter). These impacts were exacerbated when several refineries shutdown simultaneously in the South Coast region, with neighbors reporting respiratory impacts and sickness for days following one event. See our previous, detailed comments as well.

VI. Mandatory Reporting Regulations must be modified to allow public access to emissions calculations, & to strengthen conflict of interest limits

The Mandatory Reporting of Greenhouse Gas Emissions Regulation has three severe deficiencies that undermine implementation of AB32. The basis of the emissions data, including measurements, evaluations, and calculations should be reported by companies to the statewide greenhouse gas (GHG) inventory; the reports and the underlying calculations should be housed at CARB; and the conflict of interest limits for the verifiers in the proposed regulation are weak. CBE has brought these issues to CARB several times and was assured that review of the rule

would occur this fall.[47] CARB has not reviewed the rule and CBE's concerns have not been addressed to date.

First, as the regulation is stated, the public will only get the emissions result, and not the evaluation, calculations, and measurements used to determine those emissions for each refinery. This is contrary to normal regulatory practice, where the basis of emissions is routinely provided. By allowing the companies to keep the data in-house, is not transparent and ill-equips the public to meaningfully participate in discussions about the emissions inventory and rule-making. This is contrary to the principles of Environmental Justice

Public access also allows trust and confidence of the public in the emissions inventory, and ensures valuable public oversight of accuracy, and the use of sound and the most updated methods of engineering principles. The public is frequently leery of estimates done using emissions factors, especially when such information cannot be openly verified. There are a number of scientists, professionals, and advocates that provide a resource when they review and provide technical comment to CARB. We urge for the data to be reported to CARB to allow public access, ensuring public verifiability and confidence in individual company reports and in the GHG emissions inventory, upon which GHG reduction goals and measures are set.

Second, In lieu of publicly available data, the current regulation relies on a third party consultant to the polluter who will verify the emissions calculations and measurements behind closed doors. While having a third party verifier can provide important expertise to companies doing their emissions estimates, conflict of interest limits for the verifiers in the proposed regulation are weak. It allows large consulting companies with existing contracts with a polluting facility to still provide third party verification, as long the company provides a different individual for the GHG verification within the company. Especially in such cases, the data underlying the emissions inventory must be made available to the public and not kept secret. We urge you to require that all the basis of the GHG emissions calculations, evaluations, and measurements be included in the emissions report provided to ARB.

Third, Subarticle 4, on verification for requirements of the emissions data reports, states that verifiers may be used for up to six years. Then it says, "If an operator is required or elects to contract with another verification body, the operator may contract verification services from the previous verification body only after not using the previous verification body for at least three years." [**§ 95130 (a) and (b)]** ARB stated they would envision allowing a large consulting company (with employees already working for the polluter doing non-GHG work), to have another individual within the same company do the GHG verification. Such an individual in the large company would still be considered as a third party without a conflict of interest. This means that multinational consulting companies with large financial interests in being hired by polluting companies (who they have been routinely paid to defend) can be considered as "impartial" third party verifiers as long as the other work they did for the company was not on GHGs. This is problematic and provides weak conflict of interest limits**.**

Environmental Justice requires equal public health protection from climate change, which causes drastic increases in smog, water shortages, killing heatwaves, and more. Low-income

[47] See August 27, 2007 and November 28, 2007 letters; issue raised at March 25, 2008 EJAC meeting, and March 25, 2008 resolution adopted by EJAC.

people have fewer resources to cope with these effects of climate change and are more severely impacted. CARB must pay more than lip service to the concerns of environmental justice communities throughout the state, because lives are at stake.

We all know that climate change is an imminent crisis that threatens our economy and even the planet. Experts tell us we must drastically reduce greenhouse gases this decade or face disaster. According to a leaked report of the Pentagon, climate change threatens our national security worse than terrorism because of its severe impact on food, water, and other resources. If we fail to adopt a serious plan based on real evidence now, and instead accept what seems like a simple way forward (adoption of the wrong plan structure, leave key details for later), we face the gravest risk.

As environmental activists, we are accustomed to winning some and losing some, and then trying again later. In this case that won't cut it. If we lose now, we face disaster. We urge the California Air Resources Board to gravely consider what happens when this plan fails. We believe that all of us should truly be afraid of this consequence. It is unusual for us to put our written comments in such emotional terms, but this situation is unprecedented. We believe that ARB staff and Board must not fall into a pattern of thinking that it is too complicated to focus on details. Without focusing on essential details, this plan will fail.

Thank you for your work. Please scrutinize these issues with all the energy that this crisis requires. We urge you to correct these problems with the Proposed Scoping Plan and Mandatory Reporting regulation.

Sincerely,

Bill Gallegos, Executive Director, EJAC Representative

Anna Yun Lee, Research and Staff Scientist; Alternate EJAC Representative

Adrienne Bloch, Senior Attorney

Julia May, Senior Scientist

(Attachments 1, 2, and 3 within this document, additional attachments separate)

Attachments list

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Attachment 2 Honesty About Ethanol NYTimes

Attachment 3 Excerpts from CBE Slides on Oil Refineries and Fossil Fuels impacts in CA

Attachment 4 Billions wasted UN climate programme

Attachment 5 LUC-biofuels-Nichols_6-30-08 UCBerkeley

Attachment 6 59-scaqmd0001 SCAQMD March 21 2007

Attachment 7 Tesoro files lawsuit to prevent ethanol reg

Attachment 8 Princeton Croplands Biofuels Increases GHGs

Attachment 9 USDA Forecasts Robust Corn Soybean Crops

Attachment 10 Ethanol to consume 30% of corn

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Attachment 12 Economist_com Food Riots

Attachment 13 Science Daily carbon in soils

Attachment 14 High Corn Prices Cast Shadow Over Ethanol Plants

Attachment 15 CRP declines spell bad news for grassland birds

Attachment 16 ucberkeley_epa_letter Land Use Change impacts

Attachment 17 50-carfg07-ws-1 Wuebben June 14 07

Attachment 18 47-carfg07-7 SCAQMD June 13 08

Attachment 19 FarrellSperlingLCFS1

Attachment 20 comparing Venez and Canada crude

Attachment 21 vzimpacts

Attachment 22 Black Carbon Playing Major Role Arctic Climate Change - SciencePoles

Attachment 23 fiore2002a on Methane control

Attachment 24 Link climate air pollution Methane controls double div

Attachment 25 Global health benefits mitig ozone pollution

Attachment 26 03 Cal Almanac Emissions Air Quality chap203

Attachment 1 Excerpt from Scoping Plan – Summary of Recommended Measures

Table 2: Recommended Greenhouse Gas Reduction Measures

Recommended Reduction Measures	Reductions Counted Towards 2020 Target ($MMTCO_2E$)	
ESTIMATED REDUCTIONS RESULTING FROM THE COMBINATION OF CAP-AND-TRADE PROGRAM AND COMPLEMENTARY MEASURES		**146.7**
California Light-Duty Vehicle Greenhouse Gas Standards • Implement Pavley standards • Develop Pavley II light-duty vehicle standards	31.7	
Energy Efficiency • Building/appliance efficiency, new programs, etc. • Increase CHP generation by 30,000 GWh • Solar Water Heating (AB 1470 goal)	26.3	
Renewables Portfolio Standard (33% by 2020)	21.3	
Low Carbon Fuel Standard	15	
Regional Transportation-Related GHG Targets[16]	5	
Vehicle Efficiency Measures	4.5	
Goods Movement • Ship Electrification at Ports • System-Wide Efficiency Improvements	3.7	
Million Solar Roofs	2.1	
Medium/Heavy Duty Vehicles • Heavy-Duty Vehicle Greenhouse Gas Emission Reduction (Aerodynamic Efficiency) • Medium- and Heavy-Duty Vehicle Hybridization	1.4	
High Speed Rail	1.0	
Industrial Measures (for sources covered under cap-and-trade program) • Refinery Measures • Energy Efficiency & Co-Benefits Audits	0.3	
Additional Reductions Necessary to Achieve the Cap	34.4	
ESTIMATED REDUCTIONS FROM UNCAPPED SOURCES/SECTORS		**27.3**
High Global Warming Potential Gas Measures	20.2	
Sustainable Forests	5.0	
Industrial Measures (for sources not covered under cap and trade program) • Oil and Gas Extraction and Transmission	1.1	
Recycling and Waste (landfill methane capture)	1.0	
TOTAL REDUCTIONS COUNTED TOWARDS 2020 TARGET		**174**

Other Recommended Measures	Estimated 2020 Reductions ($MMTCO_2E$)
State Government Operations	1-2
Local Government Operations	TBD
Green Buildings	26
Recycling and Waste (other measures)	9
Water Sector Measures	4.8
Methane Capture at Large Dairies	1.0

[16] This number represents an estimate of what may be achieved from local land use changes. It is not the SB 375 regional target. ARB will establish regional targets for each Metropolitan Planning Organization (MPO) region following the input of the Regional Targets Advisory Committee and a public consultation process with MPOs and other stakeholders per SB 375.

Attachment 2 Honesty About Ethanol NYTimes

Honesty About Ethanol, New York Times Editorial, November 18, 2008

http://www.nytimes.com/2008/11/18/opinion/18tue2.html?emc=tnt&tntemail1=y

One of the 2007 energy bill's most ambitious provisions — the ethanol mandate — has turned out to be its most troublesome. The provision would boost ethanol production from 7-plus billion gallons today to 36 billion gallons by 2022. In practical terms, this means doubling the production of corn ethanol until advanced forms of ethanol and other biofuels kick in.

Corn ethanol came under fire earlier this year when evidence mounted that the diversion of cropland from food to fuel had contributed to the spike in worldwide food prices. What is less clear is whether corn ethanol is good or bad for the planet — whether it emits fewer or more greenhouse gas emissions than conventional gasoline. The answer turns on how you measure emissions.

Congress stipulated that ethanol be cleaner than gasoline and handed the job of measuring emissions to the Environmental Protection Agency, which has found itself under ferocious pressure. **The ethanol industry wants its product shown in the best possible light. Environmentalists want an honest accounting, which the public deserves but which they do not think an industry-friendly Bush administration is capable of.**

The most contentious question involves the emissions caused by direct and indirect changes in land use associated with growing biofuels. Until late last year, corn ethanol had been seen as at least carbon neutral — and thus much cleaner than gasoline — because the greenhouse gases it absorbed while growing canceled out the gases it emitted during combustion. This made it a win-win fuel — even a win-win-win fuel — because it also encouraged the construction of ethanol refineries in the American heartland and eased, to some extent, America's dependence on imported oil.

But then came a spate of new studies arguing that earlier calculations had failed to account for the emissions caused when land is cleared and tilled, releasing large quantities of stored carbon. In particular, the studies said, the earlier scenarios had overlooked the indirect or ripple effects of ethanol production — the carbon released when the diversion of land from food to fuel in the Corn Belt causes farmers elsewhere in the world to clear untouched land to make up for the loss.

The studies also said that some biofuels — waste material, forest residues, certain grasses — can be produced without harmful changes in land use and with benefit to the atmosphere. But the indirect effects of converting food crops to fuel production were found to cause net increases in emissions in almost every case.

The industry says that such indirect effects are impossible to measure and that the studies are premature. One industry group has asked the E.P.A. to ignore them entirely. But it seems clear on its face that some land-use changes — e.g., cutting down rain forests to plant crops — would have seriously negative effects.

In any case, it is the E.P.A.'s duty under the law to give the most unbiased, accurate accounting it can. The issue here is the fate of the planet, not the fate of a particular industry.

(emphasis added in bold)

Attachment 3 Excerpts from CBE Slides on Oil Refineries and Fossil Fuels

CBE Slides -- the trouble with the California Oil Industry and Fossil Fuels

Environmental Racism in California?

California Pollution Sources are unfairly concentrated in communities of color – for example, this map shows the largest numbers of toxic release facilities in areas with over 80% people of color population

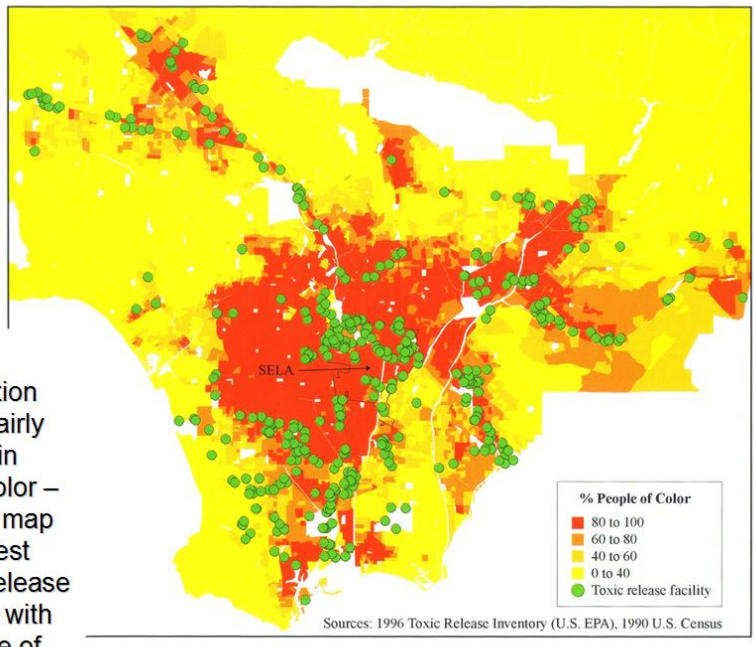

Figure 1.1: People of Color and Toxic Release Facilities in Los Angeles County

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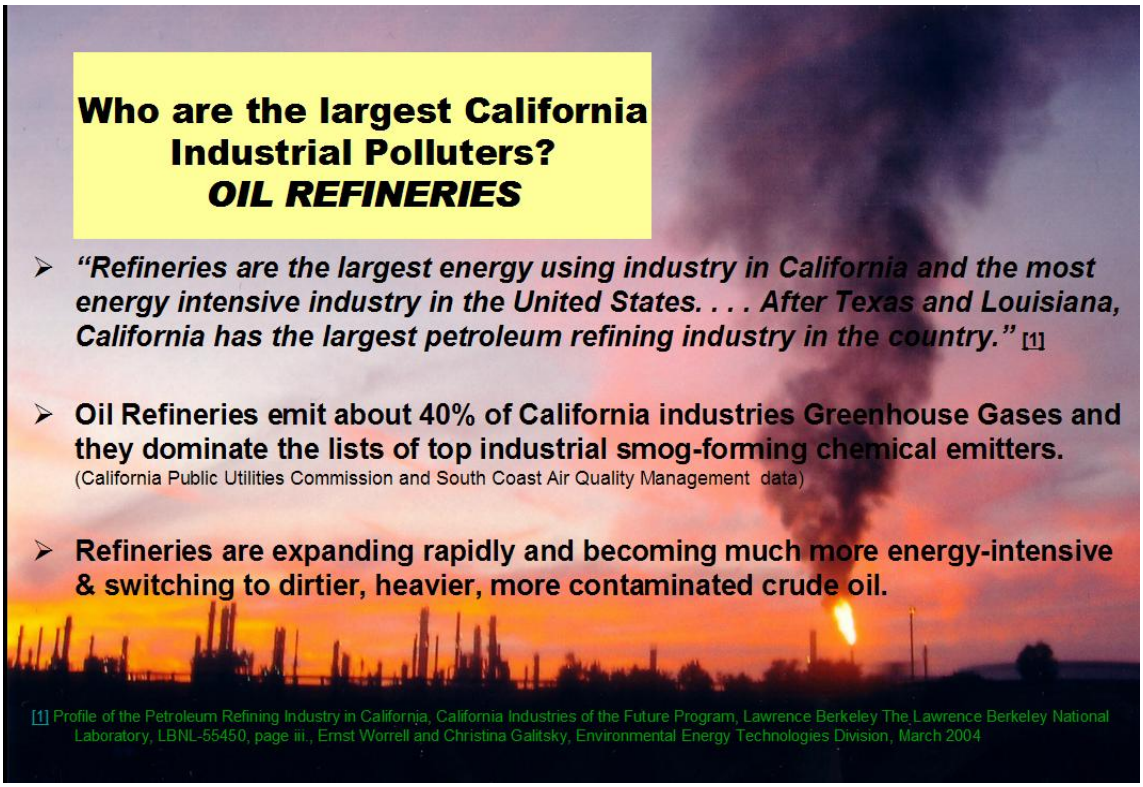

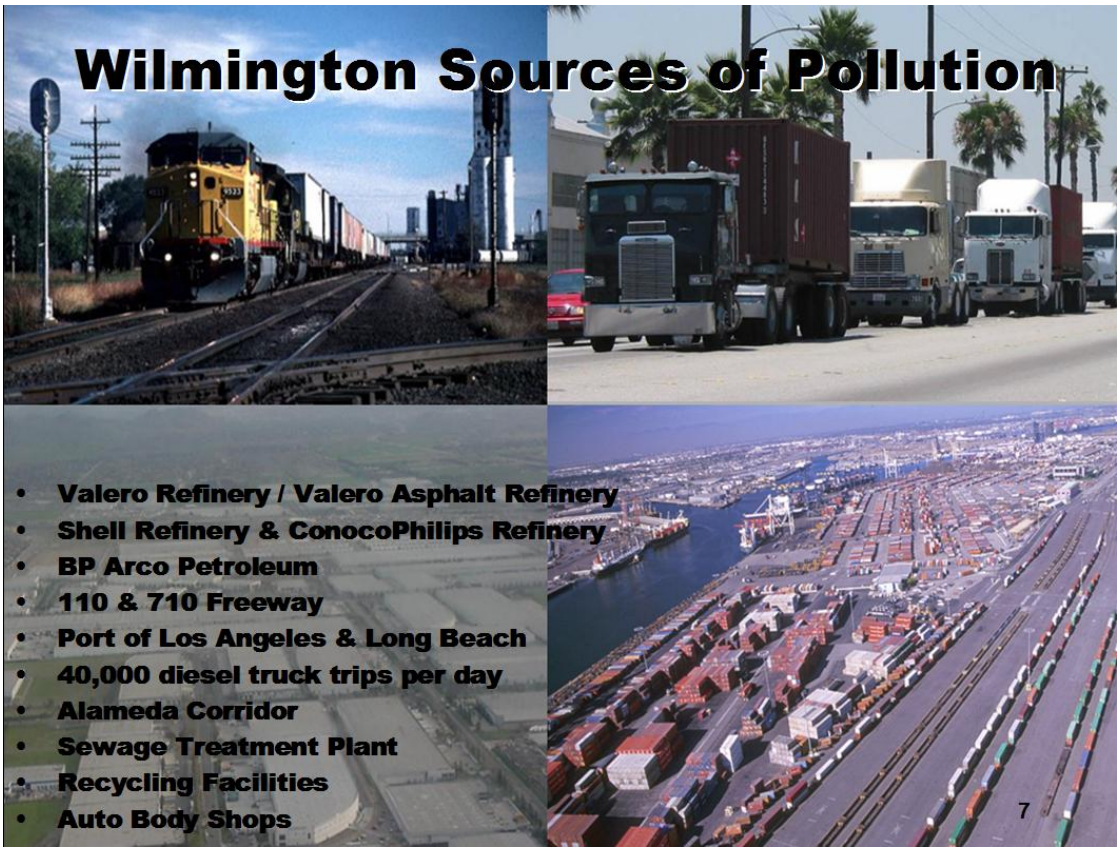

Drill Baby Drill -- Neighbors describe impacts of oil drilling in the middle of a residential neighborhood in Wilmington based on a CBE survey:

- *"Sixty-six percent of respondents note that they have smelled strange odors at least once a week . . . "*
- *My wife had to be taken to the hospital from the fumes*
- *Extreme breathing difficulties, Dr. visits, extensive lung illness, constant coughing*
- *A lot of allergies, headaches, nausea, and difficulty breathing*
- *Every morning lots of black film all over the cars*
- *"A living hell"*

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San Francisco Region is another major oil industry center:

CBE youth performed a health survey in a Bay Area housing project (Rodeo) on a refinery fenceline, & found very high reported asthma rates (>50%)

"The KAEP [Kids Against Environmental Pollution/CBE] community survey shows reporting by community members of a high incidence of health problems. While the study is not a controlled study, the numbers people are reporting should raise questions and prompt further investigations. It indicates valid community concern about the health affects of refinery emissions and air pollution in Bayo Vista."

"Politicians and air management district officials need to address these concerns directly by requiring stricter emissions monitoring, forcing emission reduction efforts from large point sources in the area like the refineries, and developing an effective plan for reducing mobile source emissions. Public health officials need to better assess the short and long term health effects of this pollution on the Bayo Vista community."

Environmental health scientist Rachel Morello Frosch, Ph.D

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