April 10, 2017

Governing Board Members
California Air Resources Board (CARB)
Via: Scoping Comment upload portal[1]

Re: CBE Scoping Comments-Just Transition to Zero Carbon and Equity: Ramp up EVs, Stop expanding Power plants, Refineries & Dirty Crudes, Replace Trading with Direct Cuts

Dear Board Members,

CBE is a statewide Environmental Justice (EJ) organization working on energy issues including oil refineries, power plants, drilling, and on a Just Transition to clean transportation and renewable electricity. We appreciate that CARB has been reaching out on Environmental Justice in favor of directly cutting Greenhouse Gases (GHGs), and smog precursors and toxics. We also appreciate the excellent work done by the Environmental Justice Advisory Committee.

But the 40% cuts in GHGs needed by 2030 are much steeper than the 2020 targets, and the heavy reliance on pollution trading won't cut it. We urge you to replace trading with direct cuts, and more importantly, a transformation to renewable, equitable energy, addressing the following:

- **Set in place a serious and detailed Just Transition plan to move fossil fuel industry jobs to zero carbon jobs, toward a clean, equitable economy.** This concept was originated by trade unions for training workers and moving them out of polluting industries, and has been taken up by the EJ movement and broadened to include comprehensive plans for equitable community transformation to healthy and democratic energy economies, away from the current monopolistic systems. This is technically feasible, but needs the political will to start detailed planning.
- **Zero Carbon Transportation and equity must be ramped up and made clear commitments; this would eliminate emissions from three fossil fuel sectors (vehicles, oil refineries, & oil drilling), provide storage for grid renewable energy, and eliminate most smog.** Renewable transportation is making progress, but still less than 1% of vehicles, and far behind electricity, which is approaching a third renewables. CARB deserves great credit for planning 4.2 million EVs by 2030, especially facing White House hostility, but commitments are vague, and modelers indicated 6-7 million EVs by 2030 are needed. Equity in access to zero carbon transportation needs help – EJ communities are *heavily* impacted by fossil fuels, and frequently don't have even one EV charging station.
- **Refineries must 1) stop Business-As-Usual expansions and switches to Extreme Crudes,[2] 2) use direct cuts and facility emission caps instead of trading, 3) face the need for gasoline production phaseout through a Just Transition plan, and 4) address emerging exports.** This will also cut smog and toxics in EJ communities, where emissions have recently been found to be grossly underestimated. Currently the state is ducking the obvious need for a phaseout of the oil industry, is ignoring major expansions, and allowing cheap out-of-state offsets as a false solution.
- **Big problem with encouraging "lighter" crudes–**though this helps avoid extreme Tar Sands crudes, it encourages lighter North Dakota Bakken crudes with high methane extraction emissions, high benzene,

[1] https://www.arb.ca.gov/lispub/comm/bcsubform.php?listname=scopingplan2030&comm_period=N
[2] Including Tar Sands crude, North Dakota Bakken fracked crudes, and others

water pollution, and is highly explosive. The major Tesoro Wilmington/Carson refinery expansion includes plans for a switch to large volumes of Bakken; permitting does not account for high extraction GHGs. Both heavy Canadian and light Bakken cause severe GHGs and harms; switches must be prevented. Public reporting on crude details and changes is crucial too.

- **Replace inherently anti-EJ Cap & Trade with Cap & Tax revenues:** CARB should provide a fair evaluation of Cap & Tax in detail, instead of proposing specific Cap & Trade regulations, and only minimal evaluation of alternatives. Cap and Trade allows oil refineries to purchase offsets and credits instead of making local pollution cuts, and so is inherently harmful to local EJ communities. Cap & Tax can provide revenues, capture the social cost of carbon, and be designed equitably and effectively.
- **Stop expanding gas-fired electricity immediately, continue to decarbonize the Electricity Sector:** Despite clear documentation showing the glut of gas-fired power plants in the state costing Californians billions,[3] new plants are still being proposed and approved. We also need to plan phaseout of existing plants. Maximize synergistic approaches using different renewables together, including balancing abundant solar by charging EVs, and through other energy storage, aggressive energy efficiency, and Demand Response (meeting state's Loading Order priorities). Conservation is an under-utilized resource, distinct from efficiency. Although it had promise, it is time to re-evaluate an expanded Independent System Operator (ISO) now that the federal Clean Power Plans are undermined.
- **Oil Extraction:** CBE and EJ groups have previously commented on Oil & Gas extraction emissions, during CARB rulemaking.

I. The Scoping Plan should add a Just Transition plan for workers & communities, which is necessary for carrying out the transformation to clean energy

Just Transition Recommendation:

- Set in place a detailed Just Transition Plan to move fossil fuel industry jobs to zero carbon jobs, toward a clean, equitable economy.

A Just Transition plan would provide transition assistance for workers and residents in low-income communities that are disparately impacted by fossil fuel infrastructure, to be designed by each community based on circumstances and needs, including planning funding support. The fundamental transition to a "post carbon" energy system requires economic transformation away from the subsidized fossil fuel infrastructure. Where resources need to move out of polluting activities, transitory assistance may be needed, such as worker retraining programs and more.[4] The deep decarbonization required means a major shift from "old" to "new" jobs.

The former Oil Chemical and Atomic Workers Union, CBE, and other community and environmental justice groups have long termed these policy actions collectively a "Just Transition Program." Low-

[3] *Californians are paying billions for power they don't need*, Feb. 5, 2017, http://www.latimes.com/projects/la-fi-electricity-capacity/

[4] Coady et al., 2015. International Monetary Fund Working Paper (*see* page 30); IMF website; http://www.imf.org/en/Publications/WP/Issues/2016/12/31/How-Large-Are-Global-Energy-Subsidies-42940.

income communities nearest the region's major fossil fuel industries, and workers in those plants have disproportionate needs for Just Transition support.

In particular, oil refining provides fewer direct jobs per dollar economic activity than any other sector in the statewide economy,[5] but those thousands of jobs are in the communities hosting refineries—demonstrating both disparate legacy impacts and disparate transition risks in refinery towns' local economies.

The disparate cumulative impacts of past and future pollution and economic disruption warrant focused protection. Locally-based decisions also are necessary because post-carbon energy technologies require distributed placement,[6] requiring local land use decisions, and because local jobs programs provide essential support for renewable and efficiency build-out.

Thus, achieving Plan goals requires the community capacity-building that Just Transition policies would provide, and it appears necessary and appropriate to fund local community actions to achieve these goals. Therefore, the Plan should include—"Community-based Just Transition Support" measures as described above.

II. Zero Carbon Transportation is essential to avoid climate destruction & cut smog, needs special attention to equity, and contradictions need clarifying

Transportation Recommendations:

- Clarify apparent contradictions in Plan, ensure transportation measures are part of commitments (not just generalized goals),
- Ensure high numerical commitments for ZEVs - at least 6 million by 2030.
- Ensure equity access to ZEVs to address high fossil fuel burden in EJ communities.

Zero Carbon Transportation and equity must be ramped up, would eliminate emissions from three fossil fuel sectors (vehicles, oil refineries, & oil drilling), provide storage for grid renewable energy, and eliminate most smog. Renewable transportation is making progress, but still less than 1% of vehicles, and far behind electricity, which is approaching a third renewables. CARB deserves great credit for planning 4.2 million EVs by 2030, especially facing White House hostility, but commitments are vague, and modelers indicated 6-7 million EVs by 2030 are needed (with much higher goals are touched on in the Scoping Plan). Equity in access to zero carbon transportation needs help – EJ communities are *heavily* impacted by fossil fuels, and frequently don't have even one EV charging station.

Zero Carbon Transportation is perhaps the most energy-transformative measure in the Scoping Document, because it can eliminate emissions from: 1) the largest sector of GHGs and smog (transportation), in addition to 2) oil refining and 3) oil extraction; furthermore, battery ZEVs can

[5] US Economic Census, various years. Compare California sectors employment and gross revenues data; https://census.gov/programs-surveys/economic-census/data/tools.html.
[6] Williams et al., 2015; https://www.arb.ca.gov/research/lectures/speakers/williams/williams.htm.

provide energy storage for renewable electricity. Major cuts in fossil fueled transportation is also necessary to meet the steep GHG cuts set by SB350 and SB32 (40% GHG cuts by 2030), and necessary if we are ever to eliminate our severe smog.

CBE appreciates CARB's recognition in the Scoping Plan that Zero Carbon transportation is an essential solution to climate disaster and smog. We believe that CARB is aware of the importance of these measures. For example, the Plan states:

> **The growing severity of climate impacts, persistent public health impacts and costs from air pollution,** and rapid technology progress that supports the expectation that cost parity between some ZEVs and comparable internal combustion vehicles will be attained in a few years, **underscores the need for further action on ZEVs**. **Therefore, CARB solicits input on additional policies to move toward a goal of achieving 100 percent ZEV sales in the light-duty vehicle sector.** Austria, Germany, India, Netherlands, and Norway are all taking steps to, or have indicated a desire to, move to 100 percent ZEV sales in the 2020–2030 time frame. [p. 100]

However, the Plan includes contradictions that indicate such plans are not clear commitments.

A. The Plan should clarify the following apparent contradictions or unclear designations, and ensure these are commitments

Below are examples of contradictions or unclear designations of commitments, sometimes identifying Mobile Source measures as commitments, otherwise stating them as not included in Plan commitments. We request clarification, and re-stating as clear commitments.

Transportation Measures: Contradictions or unclear Commitments	**Commitment?**
Table II-1 (Proposed Scoping Plan Scenario) includes the 4.2 million vehicles as an existing commitment [p. 34]	**Yes** - Asterisk indicates "known commitments"
Table III-3 (Estimated 2030 Cost Per Metric Ton by Measure: "Mobile Source Strategy (CFT) with Increased ZEVs in South Coast &additional reductions in VMT and energy demand & early retirement of LDVs with more efficient LDVs" [p.65]	**No** - Bolded measures are commitments, this measure is not listed in bold
Ongoing and Proposed Measures – Vehicle Technology • Implement the Cleaner Technology and Fuels Scenario of CARB's Mobile Source Strategy, which includes: -- 4.3 million zero emission and plug-in hybrid light-duty electric vehicle by 2030 [p. 106]	**Unclear** – stated as ongoing & proposed

B. Electric Vehicles goal numbers should be larger

CARB has a history of pioneering ZEV regulations that would have put California far ahead of current numbers, especially if California had not allowed the car industry to gut them in the past. (Goals of 10% EVs by 2003 were abolished -- see Who Killed the Electric Car, Revenge of the Electric Car.[7]) Now California is catching up again compared to goals set in the 1990s, still has the best programs in the nation, and must stick by its plans and expand them. The decisions made by the Detroit car industry were very unfortunate for California *and* for Detroit, since Detroit was in the forefront of this obvious wave of the future – Zero Carbon transit. Current moves by the Trump administration to remove California's Clean Air Act waiver for tighter standards for cars must be fought aggressively. We appreciate that CARB is standing up for California's rights to set standards to protect Californians from extreme smog and climate change.

Presentations on modeling of California's energy mix provided higher numbers of EVs for meeting SB350 40% GHG cut requirements. The Scoping Plan also generally identified higher percentages of Electric Vehicles (EVs) as appropriate goals, compared to the specific numbers identified as targets in the Scoping Plan. For instance:

- The Scoping Plan identifies **4.2 million** EVs as a target for 2030 (although whether this is a clear commitment or not, is unclear) (p. 34)
- **5 million** EVs were assumed in all scenarios in modeling done by E3[8] (Presentation - Renewable Portfolios for CAISO SB 350 Study, All-Agency Workshop, July 26, 2016, Sacramento, California, Slide 21[9]).
- **6-7 million EVs** was identified in an earlier presentation by E3.
- The Scoping Plan generally supports other countries' goal of **100% ZEV sales** for the light duty sector (p. 100) – which translates to **over 25 million vehicles**,[10]

CARB should clearly mandate significant numbers of ZEVs for 2030, at least 6 million.

C. Equity provisions need to be expanded

The SB350 Transportation Barriers study is in development, and its results will need to be implemented and included in Scoping Plan measures. CBE earlier proposed the following additions to the plan, which need to be implemented. Both the structure and the funding to provide access to renewable transportation in EJ communities is needed.

Here are the additions CBE proposed to the SB350 transportation barriers study:

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[7] http://www.whokilledtheelectriccar.com/; and http://www.revengeoftheelectriccar.com/

[8] Energy and Environmental Economics

[9] http://docketpublic.energy.ca.gov/PublicDocuments/16-RGO-01/TN212390_20160722T115132_Presentation_on_SB_350_Study_72616.pdf

[10] Department of Motor Vehicles, 2015 shows almost 25 million registered automobiles, 2030 could presumably be much higher, although alternative options including expanded public transit, car sharing, and other options could also substantially reduce the numbers https://www.dmv.ca.gov/portal/wcm/connect/5aa16cd3-39a5-402f-9453-0d353706cc9a/official.pdf?MOD=AJPERES

- **Create a more cost-effective CVRP (Clean Vehicle Rebate Project) by lowering the income cap and** target the funding so that low and moderate income earners have more funding and incentives to purchase used and new ZEVs-- and use other strategies to encourage higher income earners to purchase ZEVs.
- **Create successful <u>transformative</u> pilot programs** in at least two EJ communities in California. Showcase success in these pilot projects (designated geographic areas) and show how this approach can be replicated in other EJ communities. For example, designate EJ areas such as the City of Huntington Park, South Gate, or West Contra Costa County, as ***EJ EV zones*** and create a 5 year strategic plan with specific targets on creating access to different clean mobility options including:
    - **Create a multi-agency task-force with funding**, resources and a mandate to implement the plan and reach the targets;
    - **Create widespread access to charging stations** at homes, businesses and public spaces in the pilot area;
    - **Allocate resources for the EJ EV zone by targeted outreach** and cooperation with elected offices and community-based organizations
    - **Creating an effective biking and bike-sharing program** in the pilot area,
    - **Creating an effective EV car share program** in the pilot area,
    - **Work with the city planning staff to update general plans** or create specific plans to prioritize active mobility options and *Complete Streets*;
    - **Create additional incentives for people living in the EJ EV zone** to take advantage of the wide range of ZEV mobility options;
    - **Work with community-based organizations and academic partners** to show how this "Leap-Frog" and transformative approach can be replicated in other EJ communities and inform policy moving forward.

The Greenlining Institute and Coalition for Clean Air also identified equity measures in the context of the SB350 Barriers development as follows, which CBE supports:

Providing funding, policy incentives in EJ communities for 1) Improving Access and Afford-ability, 2) Marketing, Education, & Outreach, 3) Jobs and Workforce Development, and more including:

- Rebates for used EVs,
- Electric transit buses, incentives and zero emission shared mobility (e.g. bike sharing and clean tech ride-sharing)
- Discounted or free transit passes,
- Community mobility needs assessments (urban, suburban, rural, density, existing infrastructure, access to public transportation, discount rates for underserved communities (e.g. credit risk buy-down, subsidized down payments)),
- Diverse payment options (e.g. cash, transit cards, EBT cards), in-person trainings, tailored customer service,

- Increase access to low-interest financing for EVs
- Increase transit service usage or efficiency via first- and last-mile mobility options (e.g., active transportation and ride-sharing services)
- Expand and increase access to worker vanpool programs
- Target outreach and education, in key languages, partner with community organizations, work with ethnic media, hire from within community), address specific community needs, locate technologies in safe, frequently-used locations
- RFP preference points for targeting workforce training, job placement, or subcontracting small business opportunities
- Tracking and reporting individual level job data within projects
- Expand funding for pre-job training (soft skill training) and job training that can feed into clean transportation jobs.
- Develop a low carbon transportation career map (e.g. Solar Career Map)
- More detail for jobs tracking/reporting recommendation: quantity, quality, and access measured using certified payroll data to extent feasible; number of workers, wages and benefits, job status (full/part-time, apprentice or not, length of service), worker demographics (race/ethnicity and gender), location (i.e., census tract).
- Ongoing analysis and policy development, expanding reach of clean mobility options, establish baselines and metrics, periodic assessment and evaluation of progress
- Maintain ongoing and create new partnerships between ARB and community-based organizations and other entities that have relationships with DAC residents and low-income Californians.

The Scoping Plan should include such detailed equity measures in this key sector.

III. Direct Controls on Oil Refineries are needed, attention to dangerous crude oil switches, and a long-term plan for refinery phaseout with a Just Transition plan

Refinery Recommendations:

- Stop business as usual **refinery expansions,** allowed by regional & local permitting
- Stop **crude oil switches** to *both* heavy Tar Sands & *also lighter Bakken crude oils* (which has high GHGs during extraction, high benzene, is more explosive and water-polluting)
- Use **Direct Cuts and Facility-specific Caps** instead of pollution trading
- **Deeper Refinery Cuts** are needed
- Begin **planning for gasoline production phaseout** (this can no longer be avoided), **with an explicit Just Transition plan for fossil fuel workers and communities**
- Emerging **gasoline, diesel, and other refinery product exports** must be addressed.
- **Public reporting of crude oil characteristics** (full assays), baselines, & changes is crucial
- **Correct underestimated emissions**

A. Background – Oil Refinery GHG and co-pollutant impacts are underestimated, & this sector is inherently unsafe compared to renewable transportation

This sector is arguably responsible for the worst GHG, smog precursor, and toxic impacts in the state, as the oil refining industry uses feedstocks (crude oils) that cause air, water, and explosion risk during extraction, transport, and refining, in addition to producing transportation fuels causing the biggest source of local and global air pollution. Furthermore, recent studies show local oil refining air pollution is grossly underestimated (more below).

We will be unable to meet GHG and smog precursor elimination goals without phasing out oil refining, extraction, and fossil fueled transportation. This can be accomplished in a reasonable manner through natural stock turnover, but only if this sector is not allowed to continue receiving Business-As-Usual expansion permits. A specific plan to replace our oil infrastructure over time with clean renewable energy, including a Just Transition plan for clean jobs replacement is not a far-fetched vision, but obviously necessary to avoid climate disaster and the public health disaster of smog. California continues to side step this obvious conclusion.

While the Scoping Plan is for the purpose of reducing Greenhouse Gases, it is also tasked with addressing co-pollutants. Another co-benefit of renewable transportation fuels that will replace oil refinery production, is that they are inherently safer than oil industry energy. Below are only a few photos demonstrating inherent risks of oil refineries in California that would be avoided if we stop expanding, and begin reducing and replacing this industry with renewable transportation sources.

Gradual phaseout of the Oil Industry with a Just Transition plan is not only essential to avoid Climate Disaster and Smog Hazards, but replacing with Renewable Transportation is Inherently Safer

August 2016, Tesoro LA sulfur tank explosion.

2009 Tesoro LA Coker Fire

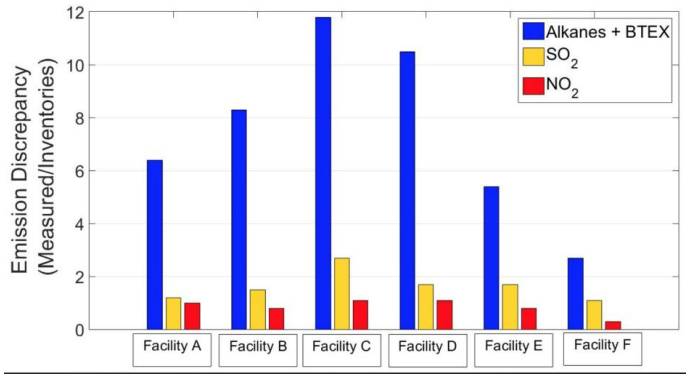
2012 Chevron Richmond Explosion

Various California refinery smoking flaring events below, and accidents above are small fraction of numbers of hazardous events

Emissions have recently been found to be grossly underestimated in a recent study that Swedish researchers carried out with the South Coast AQMD. According to reports on the study unveiled at the American Geophysical Union conference found:[11]

> **Refineries in greater Los Angeles are emitting up to 12 times more toxic chemicals than previously reported,** according to a new study by Swedish researchers and the South Coast Air Quality Management District. The results, which were unveiled at the American Geophysical Union conference in San Francisco earlier this month, have substantiated the concerns environmental justice advocates and residents of industrial cities like Torrance, Carson and Wilmington.

COMPARISON BETWEEN MEASUREMENTS AND EMISSIONS INVENTORIES



The Abstract states:[12]

[11] *LA-area refineries emit up to 12 times more toxic chemicals than reported,* December 29, 2016, Southern California Public Radio, http://www.scpr.org/news/2016/12/29/67663/la-area-refineries-emit-up-to-12-times-more-toxic/

[12] *Quantification of Gas Emissions from Refineries, Gas Stations, Oil Wells and Agriculture using Optical Solar Occultation Flux and Tracer Correlation Methods,* 12 December 2016, Authors, Johan Mellqvist, Chalmers University of Technology,

> . . . VOC emissions from major sources such as refineries, oil wells, petrol stations oil depots and oil platforms were measured during September and October 2015 using several unique optical methods, including the Solar Occultation Flux method (SOF) and tracer correlation technique based on extractive FTIR and DOAS combined with an open path multi reflection cell.
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> . . . **The results from the field campaign show that the emissions from the above mentioned sources are largely underestimated in inventories with potential impact on the air quality in the Los Angeles metropolitan area. The results show that oil and gas production is a very significant VOC emission source. . . .**

This study speaks to co-pollutant smog precursor and toxics at oil refineries, which need to be accounted in CARB's EJ analysis, but could also relate to underestimation of GHGs including methane and others. CARB should add a measure to the Scoping Plan that will review oil industry emissions assessments and correct the CARB emission inventory, and co-pollutant assessment as a result.

B. Business-As-Usual refinery expansions & switches to extreme crude oil must stop; ARB should also support local measures preventing new fossil fuel infrastructure, set hard limits to expansion, and change flawed "Lighter Crude" measures

State law requires 40% GHG cuts by 2030,[13] but local and regional permitting has not caught up with the concept of no more Business As Usual expansions. Major refinery expansions continue to be approved at local air districts and other agencies, causing GHG and co-pollutant impacts that will last for decades. Regional agencies routinely approve all permits for expansions. But we are at a different point in history, where such fossil fuel expansions must stop and be reversed. CARB must take action to ensure local and regional permitting does not undermine state GHG goals, and also support local actions in support of local emission limits. This will also help California escape from extreme smog levels and toxics.

Pollution trading has allowed continued fossil fuel expansion, and is not the solution to cut GHGs, and certainly not copollutants. *A Preliminary Environmental Equity Assessment of California's Cap-and-Trade Program*[14] found that EJ communities contain higher concentrations of Cap and Trade -regulated sources which emit high levels of GHGs & particulate matter, and that these emissions had increased under Cap and Trade. Facilities mostly used out of state offsets to achieve reductions, rather than local direct cuts. The study also found further emissions reductions from GHG emitting facilities could enhance the public health and environmental equity.

In addition to the need for state actions, there is also a need for the state to support localized evaluations and control measures:

- **In the Bay Area oil refineries have attempted to bring Canadian Tar Sands crude oil in by rail,** largely defeated by local community campaigns, but still threatened statewide, which would increase carbon intensity, co-pollutants, and other impacts greatly.

Jerker Samuelsson, FluxSense Inc., Ericsson Marianne, FluxSense Inc., Samuel Brohede, FluxSense Inc., Pontus Andersson, FluxSense Inc., John Johansson, Chalmers University of Technology, Oscar Isoz, FluxSense Inc., Laki Tisopulos, South Coast Air Quality Management District, Andrea Polidori, South Coast Air Quality Management District, Olga Pikelnaya, South Coast Air Quality Management District, Abstract available at https://agu.confex.com/agu/fm16/meetingapp.cgi/Paper/180782

[13] Senate Bill (SB) 350 (De Leon), and SB32 xxxx

[14] *A Preliminary Environmental Equity Assessment Of California's Cap-and-Trade Program,* September 14, 2016, By Lara J. Cushing, Madeline Wander, Rachel Morello-Frosch, Manuel Pastor, Allen Zhu, and James Sadd, http://dornsife.usc.edu/PERE/enviro-equity-CA-cap-trade

- **In Los Angeles, the current threat is a proposed refinery expansion and crude oil switch to large volumes of *Bakken* crude oil.** While this crude itself is light (lower carbon), it has GHG emissions from high extraction, high benzene content, and is highly explosive. It is also associated with water and soil pollution in the Dakotas, and ongoing protest over impacts in indigenous peoples/ lands. (See citations below). (CARB is proposing a Scoping Plan measure to move to lighter crudes, which although lower carbon in refining, can cause extreme emissions in extraction – this should be modified to exclude switches at least to Bakken crudes.)
- **A variety of site-specific measures to prevent importing extreme oil and building infrastructure to facilitate such imports is needed.** Primary AQMD stationary source permitting of plant-level investment decisions requires region-specific focus, but also needs State support to stop business-as-usual degradation with long-term high carbon and pollution impacts
- **Accounting for various extreme oil impacts** (e.g., fracked oil volatiles including benzene and explosive qualities, tar sands refining combustion intensity, increased sulfur) requires a site-specific focus.

Example issues are described below, and need to be addressed to avoid local / regional trends that undermine state GHG goals.

1. **Tesoro Wilmington's BP Carson merger, expansion & switch to Bakken crude causes high-GHG extraction & local benzene emissions—the Scoping Plan should stop such expansions that undermine 40% cuts, & modify flawed "Lighter Crude" provisions**

The South Coast Air Quality Management District is poised to finalize the Tesoro Los Angeles (Wilmington/Carson refinery) Environmental Impact Report (EIR) and Title V permit for this project, despite extensive evidence regarding GHG impacts that are currently being ignored. This project will not only increase air pollution and hazardous release risk, there are also major greenhouse gas emissions increases associated with the project that are unaccounted in local permitting.

- **Tesoro LA is already the largest GHG emitter statewide in the Cap & Trade program, and now proposes expansion to become the largest refinery on the West Coast.** Tesoro emitted 10 million metric tons per year, with a 20% increase from the 2011/2012 period to the 2013/2014 period.[15]
- **Tesoro Wilmington was allowed to purchase the BP Carson refinery next door against anti-trust recommendations of Consumer Watchdog,** without selling other refineries, based on making environmental improvements that have not come to pass, and now Tesoro and Chevron own more than half the state's refining capacity.[16]
- **Tesoro is not retiring credits from shutting down an old Wilmington cracking unit,** but instead is using these credits to expand other parts of the refinery, and further expanding. Although the Draft EIR found increased VOC emissions, it also drastically underestimated increases.[17]

[15] See Attachment A data provided by the previously cited Cushing et all study to CEJA

[16] *As Gas Prices Spike to Record High, Consumer Watchdog Urges California Attorney General to Block Tesoro Purchase of BP Refinery and Arco Gas Stations,* 2013, http://www.consumerwatchdog.org/newsrelease/gas-prices-spike-record-high-consumer-watchdog-urges-california-attorney-general-block-t

[17] SCAQMD Draft EIR for Tesoro LARIC (Los Angeles Refinery Integration Project) Project shows new project additions offset by subtractions of the FCC (Fluid Catalytic Cracker) from the Wilmington side of the refinery, for example, tables and text on

- **The AQMD stated its plans to finalize the EIR, despite letters questioning the project by the Mayors of LA, Carson, and Long Beach,** and extensive evidence submitted by EJ community organizations including CBE that this project is dangerous, with higher emissions, counter to sustainability plans and policies.
- **The EIR claims there is no crude oil switch, while Tesoro's own CEO explicitly states to investors its plans to bring large volumes of light Bakken crude oil from North Dakota to Los Angeles and switch its LA refinery crude oil through this source**,[18] brought first by rail to Vancouver Washington (which local Pacific Northwestern Mayors and officials oppose due to rail hazards), then by ship to Los Angeles. This would bring 360,000 barrels per day[19] to West Coast refineries.
- **The Scoping Plan's proposal to encourage switches to "lighter" crude is counter-productive in the case of Bakken crude,** because of high GHGs during extraction, high benzene content,[20] high volatility (explosive),[21] and other harmful qualities.
- **About 25% of the new crude import by Tesoro is slated as Canadian Tar Sands crude in the Tesoro / Savage Vancouver Energy applications.** As is well known, Tar Sands crude is extremely high carbon, high sulfur, and causing extreme harm during strip mining.
- **These changes have impacts** in California (including greenhouse gases, explosion risk, benzene and sulfur compound increases at refinery and more), and impacts from extraction and transport in Canada, North Dakota, Oregon, and Washington which must be accounted in the Scoping Plan EIR.

The following studies emphasize the importance of accounting for the increased GHG emissions of Bakken crude oils during extraction, and removing the encouragement for these lighter crudes from the Scoping Plan.

For example, a Harvard study[22] used a top-down approach, to measure actual emissions in the

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pages 4-16 to 4-18, Chapter 4, available at: http://www.aqmd.gov/docs/default-source/ceqa/documents/permit-projects/2016/2844-deir-ch-4-(rev-9).pdf?sfvrsn=2

[18] See Attachment B, Tesoro & AQMD Investor Statements about LA Refinery Crude Oil Switch

[19] Energy Facility Site Evaluation Council, State of Washington, **Tesoro Savage Vancouver Energy Project Application No. 2013-01,** DEIS, Chapter 1 excerpt: p. 1-1, *[Tesoro Savage Petroleum Terminal LLC (the Applicant) is proposing to construct and operate the Vancouver Energy Distribution Terminal Facility (the Facility, or the Project) at the Port of Vancouver (Port) in Vancouver, Washington, located on the Columbia River. The proposed Facility would be a crude oil terminal capable of receiving an average of 360,000 barrels of crude oil per day by train, storing it onsite, and loading it onto marine vessels.]* http://www.efsec.wa.gov/Tesoro%20Savage/SEPA%20-%20DEIS/DEIS%20Chapters/DEIS%20Ch%201%20Background-PurposeNeed.pdf

[20] *Comments on the Draft Environmental Impact Report (DEIR) for the* Tesoro Los *Angeles Refinery Integration and Compliance Project*, Los Angeles, California, Phyllis Fox, Ph.D., PE, June 10, 2016, which includes the following information as examples. Full comments were submitted to the SCAQMD as part of the Draft EIR public comments, and found Tesoro was switching to Bakken crude oil, modifying the refinery to this end, and that Bakken contained higher benzene concentrations - for example: "upper bound benzene concentration in Bakken crude (7%)" at p. 47, also 5-7% MSDS reported p. 45.

[21] ATTACHMENT C – US DOT Warned Bakken Crude Explosive, Fire Risk

[22] Turner, A. J., D. J. Jacob, J. Benmergui, S. C. Wofsy, J. D. Maasakkers, A. Butz, O. Hasekamp, and S. C. Biraud (2016), A large increase in U.S. methane emissions over the past decade inferred from satellite data and surface observations, Geophys. Res. Lett., 43, 2218–2224, doi:10.1002/2016GL067987, available at: file:///C:/Users/Julia%20May/Downloads/Turner_et_al-2016-Geophysical_Research_Letters.pdf

atmosphere (unlike EPA's bottom up calculations), and which showed emissions much higher than expected. *A large increase in U.S. methane emissions over the past decade inferred from satellite data and surface observations* (Harvard, February 2016) found a major spike in worldwide methane emissions over the last decade, and found the U.S. the likely culprit: "Our results suggest that increasing U.S. anthropogenic methane emissions could account for up to 30–60% of this global increase."

It also found this has coincided with an in oil and gas production increase, and especially an increase in shale gas production ("The U.S. has seen a 20% increase in oil and gas production [US EIA, 2015] and a nine-fold increase in shale gas production from 2002 to 2014") although it did not have enough data to determine the exact U.S. sources. Discussions of this study described its importance: **"There was a huge global spike in one of the most potent greenhouse gases driving climate change over the last decade, and the U.S. may be the biggest culprit, according a new Harvard University study."**[23]

Other recent studies also found extremely high levels of methane gas leakage from oil and gas drilling operations. For example, the Science Journal *Nature* reported as follows:[24]

> "We were expecting to see high methane levels, but I don't think anybody really comprehended the true magnitude of what we would see," says Colm Sweeney, who led the aerial component of the study as head of the aircraft programme at NOAA's Earth System Research Laboratory in Boulder.

The Scoping Plan must be modified to include measures to prevent such harms from such crude oils, which while they can be light (low carbon) like Bakken, can cause very high extraction emissions. **The Scoping Plan EIR must also be modified to ensure it does not actually encourage switches to such lighter crudes, as in the Tesoro case.** It should remove the blanket concept encouraging switches to "lighter" crudes, and support communities working to stop harmful impacts from North Dakota Bakken crudes that will hurt LA EJ communities, communities in the Pacific Northwest, and communities in North Dakota. (Tesoro is also connecting its extensive North Dakota pipelines to the notorious Dakota Access pipeline.) California must be responsible for in and out of state impacts of our regulations, particularly in EJ and indigenous communities.

2. Support Bay Area Refinery Emissions Caps—And the need to tailor this precedent-setting policy to site-specific conditions in other regions

Five major Bay Area oil refineries collectively emit more particulate ($PM_{2.5}$) and GHG (CO_2e) air pollution than any other industry in the Bay Area Air Quality Management District. Finding none of these plants has an overall mass emission limit that applies to the entire refinery, and plans to expand long-lasting capacity for increasing production and lower quality oil feeds could increase refinery emissions, BAAQMD began work to develop a "backstop" against increasing refinery emissions in 2012.[25] In 2014 the BAAQMD Board voted unanimously to develop Rule 12-16 to set this backstop.[26]

Rule 12-16 would establish refinery level emission "caps"—numeric limits on facility-wide annual mass

[23] Study Ties U.S. to Spike in Global Methane Emissions, *Published:* Feb 16, 2016, Climate Central, *Researching and reporting the science and impacts of climate change, http://www.climatecentral.org/news/us-60-percent-of-global-methane-growth-20037*

[24] Nature News, 02 January 2013, available at: http://www.nature.com/news/methane-leaks-erode-green-credentials-of-natural-gas-1.12123 , Attachment 28

[25] *See* BAAQMD's 2012 "Refinery Emissions Tracking" Concept Paper.

[26] BAAQMD Resolution 2014–07.

emissions of CO_2e, $PM_{2.5}$, PM_{10}, and the PM precursors NOx and SO_2. BAAQMD plans to consider adopting proposed Rule 12-16 on May 17, 2017.

Independent analysis confirms that the regional industry is acting on its plans to expand long-lasting infrastructure for higher-emitting grades of oil and estimates that, in the plausible worst case "tar sands" oil scenarios, region-wide refinery GHG and particulate emissions could increase by 40–100 percent.[27] Other measures may cut only 20 percent from current refinery emission rates, BAAQMD estimates.

Given the urgency of this measure and the ferocity of opposition by the oil industry, it is important to note that, tailored to local conditions, the measure is effective at zero cost. Designed to prevent significant, potentially irreversible increases in refinery emissions so that other measures can more effectively reduce emissions, the refinery-level caps limit each facility's emissions to 107 percent of its maximum annual emissions over the past five years. Each facility emitted below these limits throughout this five-year period. The refiners met these emission limits while the Bay Area industry outpaced domestic fuels demand, exporting 11 percent of its fuels production,[28] and ran at essentially full crude production capacity,[29] during various years in this period.

CBE appreciates the Air Resources Board's recent statement of support for Rule 12-16,[30] and offers two recommendations to address the resultant need for updating the Scoping Plan to include this necessary complement to the Plan's other measures. First, the Plan should include BAAQMD Rule 12-16 explicitly while recognizing that this precedent-setting policy for preventing extreme oil expansion should be tailored to local conditions which may differ among the state's refining regions. Second, it should include Staff's recent finding that mass/year caps complement mass/barrel (carbon intensity) caps.

CARB should evaluate this measure for other Districts, but this needs to account for different conditions, particularly in the South Coast. For example, the Bay Area has been at greater risk of switches to Canadian Tar Sands crude, while the current biggest extreme crude oil threat to the South Coast is Bakken crude oil, which is lighter, but with multiple other extreme impacts, including high extraction emissions. Other conditions may be different in the South Coast and need to be analyzed. **Regardless, the concept of adopting measures to limit oil refineries to current emission levels is valid statewide, and must be applied to all refineries, after more specific analysis on local conditions.**

C. Direct and & Deeper Refinery Emissions Cuts are needed; AB 197 requires this

Assembly Bill 197 (E. Garcia, 2016) requires prioritizing Direct Emissions cuts Specific measures we recommend adding include the following.

[27] *See* CBE's 2 December 2016 technical report to BAAQMD regarding Rule 12-16 CEQA issues.
[28] Based on 2013 gasoline, diesel and jet fuel production and exports reported by the US EIA.
[29] The Bay Area industry's annual average 2014 crude rate reported by the California Energy Commission is 98% of its collective maximum calendar-day capacity reported by the US EIA.
[30] April 5, 2017 letter from Richard Corey, CARB, to Jack Broadbent, BAAQMD.

1. Deeper Refinery Emission Cuts Are Feasible And Necessary By 2030.

Refinery emissions can be cut more than 40% by 2030 if the amount of oil refined (refinery production) and the amount of GHG emitted per barrel refined (refinery carbon intensity) are each reduced by 25%. Statewide refinery production can be reduced more than 25% by 2030 through measures discussed above to reduce gasoline and diesel use statewide and to stop expanding capacity for refined products export. Statewide refinery carbon intensity can be reduced more than 25% by 2030 through combinations of feasible measures, such as converting from fossil fueled hydrogen production to make hydrogen by splitting water—a demonstrated technology that could use clean electricity by 2030—along with the other measures described below. Meeting the average carbon intensity already achieved nationwide (≈ 43 kg CO_2/barrel oil refined)[31] would cut ≈ 22% from current statewide refinery carbon intensity in 2015 (≈ 55 kg/b),[32] and converting to zero emission hydrogen alone could cut statewide refinery carbon intensity by ≈ 32%.[33]

Allowing refiners to get away with cutting less than their fair share of total emissions by 2030, only 20–30%, as now proposed, could unfairly increase costs to other sectors which then must make even deeper cuts by 2030. Worse, it would risk failure to meet the 40% economy-wide emission reduction goal by then. Worse still, it would unfairly prolong disparate GHG co-pollutant impacts in communities near refineries.

The Plan, therefore, should target refinery emission cuts of at least 40% by 2030.

2. Remove methane exemptions from Smog Regulations

Comments submitted to CARB by CBE in May of 2008 on the Scoping Plan identified, based on CARB data, methane emissions that are exempt from regulation. For example, three categories of Stationary Sources listed (Fuel Combustion, Petroleum Production and Marketing, and Industrial Processes) emitted about 466 tons per day (about 170,000 tons methane per year) of exempt compounds, which is likely to be mostly methane. This was about 4 million tons CO2e per year.

There is no longer any reason to continue exempting methane from smog standards emissions, either for smog, or for GHG impacts. It is now known that methane is a considerable contributor to smog, as also discussed in our earlier comment. A Harvard study, *Linking ozone pollution and climate change: The case for controlling methane*[34] found:

"Methane (CH4) emission controls are found to be a powerful lever for reducing both global warming

[31] From 257.4 MM MT CO_2 emitted and 16.4 MM b/d crude refined by US refineries in 2015; *see* tables 11 and 19 in the US EIA's Annual Energy Overview; www.eta.gov/outlooks/aeo/er/tables_ref.cfm.
[32] From 33.4 MM MT emitted by California refineries and their 3rd party hydrogen plants in 2015; CARB; (www.arb.ca.gov/cc/reporting/ghg-rep/reported-data/ghg-reports.htm) and 605 MM b/y crude refined by California refineries in 2015; CEC; (http://www.energy.ca.gov/almanac/petroleum_data/fuels_watch/).
[33] From 33.4 MM MT emitted in 2015 (*see* note above) and 10.6 MM MT emitted from refiner-produced and purchased hydrogen estimated based on 2015 hydrogen capacity (SMR) data from the *Oil & Gas Journal* using the methods reported in Karras, 2010 (DOI: 10.1021/es1019965).
[34] Fiore, et al, Harvard University, 2002

and air pollution via decreases in background tropospheric ozone (O3)"

The report was summarized in Environmental Science & Technology, Dec. 1, 2002:

> *"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:[35]

> **Linking climate and air pollution:**
> **Methane emission controls yield a double dividend**
>
> 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.**

CARB should remove methane exemptions for all sources in the state, including transportation sources. CBE proposed this, and CARB found it to be a feasible reduction measure, but never implemented it. Now CARB should evaluate adding this measure as a complementary reduction, and as an alternative to the current Cap and Trade proposal, in order to achieve the maximum technologically feasible reductions.

CARB should also direct Air Districts to remove exemptions for methane.

3. We proposed direct cuts for Refinery Boilers & Heaters in earlier Scoping Plans, but these were instead folded into Cap & Trade program – CARB can and should prioritize these Direct cuts now

A driving source of oil refinery energy use is Boilers and Heaters, with associated substantial NOx, SOx, VOCs, and particulate matter. CBE proposed direct cuts on Boilers and Heaters in earlier Scoping Plan comments,[36] but options for controlling these sources was instead folded into the Cap and Trade program, and CARB ceased considering requiring direct controls on these sources.

CARB evaluated Department of Energy Data on industrial boilers and heaters and found it cost-effective for Boilers to: replace low and medium efficiency boilers, reduce excess air, retrofit feedwater economizers, retrofit air preheaters, reduce blowdown with controls and feedwater cleanup, provide

[35] http://www.research.noaa.gov/spotlite/2006/spot_methane.html

[36] *CBE Comments on Draft Cap and Trade Regulation: Draft Cap & Trade Regulation Misses California GHG and Pollution Reduction Opportunities, Job Opportunities, and Contains Egregious Errors,* December 14, 2010, and *Communities for a Better Environment's Comments on ARB's Supplement to the AB 32 Scoping Plan FED,* July 28, 2011

blowdown heat recovery, optimize steam quality and condensate recovery, minimize vented steam, maintain insulation, steam traps, prevent leaks; and for Heaters to: replace low and medium efficiency Heaters, optimize Heaters, recover flue gas heat, replace refractory brick, maintain insulation.[37]

CBE compiled the CARB data and found the following total GHGs, and calculated NOx and CO copollutants using AP42 emissions factors. These reduction measures in total were estimated to achieve about 4 million TCO2E/year, and *save* about $46 million dollars, as shown in the following charts excerpted from the data CARB provided. This would also have cut about 24 tons per day of NOx, and 8 tons per day of CO. Although these are substantial emissions, they could very well be underestimated. **The GHG total is more than the entire amount of reductions listed by CARB for oil refineries in the current Scoping Plan** (1-3 million tonnes CO2equivalent[38]). By contrast, CARB lists 45-100 tonnes of GHG cuts for Cap and Trade.

The Scoping Plan should be amended to include specific measures including requiring meeting BACT / LAER (Best Available Control Technology / Lowest Achievable Emissions Rate) for Boilers & Heaters.

4. **Strictly Prohibit Use of Cap-and-Trade By Refineries That Emit At High Carbon Intensity, Use High Carbon Intensity Oil Feedstock, Export Refined Products, or Contribute to Disparately Severe Local Impacts.**

Several intrinsic flaws of economy-wide pollution trading schemes could result in especially serious negative impacts if the state continues to apply its cap-and-trade scheme to California oil refineries:

- ***Greater refinery carbon intensity.*** California refineries have increased the global carbon intensity of oil refining. Statewide refinery carbon intensity (≈ 55 kg CO_2/barrel oil refined)[39] is ≈ 28% greater than the average nationwide (≈ 43 kg CO_2/b)[40] now, and threatens to worsen. Refiners themselves[41] assert plans for long-lasting new infrastructure which could further increase emissions they plan to sanction under cap-and-trade. Refiners profit from dirty fossil hydrogen (used to refine higher-emitting oils) at up to 80 times[42] the carbon price set by cap-and-trade, which, as predicted in 2007,[43] results in disproportionate purchases of carbon credits from other sectors by refiners.[44]
- ***Increased extraction impacts of imported oils.*** Emissions from the extraction and production of fracked oils such as North Dakota "Bakken" and "synthetic" tar sands crude can be much greater than

[37] Compliance Pathways Analysis – Boilers, available at http://www.arb.ca.gov/cc/capandtrade/capandtrade/compathboiler.xls and Compliance Pathways Analysis – and Process Heaters, available at http://www.arb.ca.gov/cc/capandtrade/capandtrade/compathprocessheat.xls

[38] *Table III-1. Ranges of Estimated GHG and Air Pollution Reductions by Policy or Measure in 2030,* Scoping Plan, at p. 29.

[39] From 33.4 MM MT emitted by California refineries and their 3rd party hydrogen plants in 2015; CARB; (www.arb.ca.gov/cc/reporting/ghg-rep/reported-data/ghg-reports.htm) and 605 MM b/y crude refined in 2015; CEC; (http://www.energy.ca.gov/almanac/petroleum_data/fuels_watch/).

[40] From 257.4 MM MT CO_2 emitted by US refineries and 16.4 MM b/d crude refined in 2015; *see* tables 11 and 19 in the US EIA's Annual Energy Overview; www.eta.gov/outlooks/aeo/er/tables_ref.cfm.

[41] *See* refiners' comments and staff analysis of comment on proposed BAAQMD Rule 12-16.

[42] Up to $800/tonne: *see* Shaner et al., 2016. *Energy Environ. Sci.* DOI: 10.1039/cSee02573g.

[43] Farrell and Sperling, 2007. A Low-carbon Fuel Standard for California, Part 1: Technical Analysis–Final Report; www.energy.ca.gov/low_carbon_fuel_standard. *See* pp. 22–24.

[44] Cushing et al., 2016; http://dornsife.usc.edu/PERE/enviro-equity-CA-cap-trade.

those of typical "conventional" crude.[45] Cap-and-trade exempts these emissions that occur outside of the state. California refineries import more than half the crude they process,[46] and plan expansions of capacity to import more of these high-carbon oils from outside of the state.

- ***Increased impacts of refinery production for export.*** Instead of reducing production as we begin to use less of their fuels here, refiners here have increased production for export.[47] Bay Area refineries exported 11% of their combined gasoline, diesel, and jet fuel production in 2013.[48] Burning the gasoline, distillate-diesel, and petroleum coke West Coast refiners export as of 2016 emits ≈ 50 million tonnes/year of CO_2.[49] California refineries account for most of these "exported" emissions. Cap-and-trade exempts these out-of-state emissions entirely.
- ***Disparately severe impacts on disadvantaged communities.*** Locally toxic refinery emissions are correlated with refinery GHG emissions[50] and cause disparately severe health risks in nearby low income communities of color.[51] Cap-and-trade does not account for these impacts, and allows these impacts to worsen by allowing refineries here to increase emissions from excess production for export and from burning more fuel/barrel refined than the average US refinery.

Each of these consequences of applying cap-and-trade to refineries would fail to achieve the maximum feasible GHG emission reductions, fail to protect disparately impacted disadvantaged communities, or both. Thus, the Plan should prohibit the use of cap-and-trade by any refinery in each and all of these situations explicitly.

IV. Cap & Trade is defective and inequitable – CARB should provide a detailed assessment for replacing revenues with Cap & Tax

Cap & Trade Recommendation:

- Provide detailed evaluation of Cap & Tax options, delete Cap & Trade from Scoping Plan.

CBE opposes pollution trading because it is ineffective and inequitable. It allows continuing, and expanding heavy concentrations of pollution in EJ communities, without providing effective GHG cuts. Major polluters are allowed to buy their way out of making serious pollution cuts. Cap & Trade also puts off the real work we must do to decarbonize our energy systems, to avoid catastrophic climate change, and to finally eliminate our public health disaster of smog. It gives a false sense that we are making progress to address climate change.

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[45] Gordon et al., 2015; http://carnegieendowment.org/2015/03/11/know-your-oil-creating-global-oil-climate-index-pub-59285.

[46] CEC; http://www.energy.ca.gov/almanac/petroleum_data/statistics/crude_oil_receipts.html.

[47] EIA finished pet. prods. data; www.eia.gov/dnav/pet/pet_sum_snd_d_r50_mbblpd_m_cur.htm.

[48] From *PADD 5 Transportation Fuels Markets*; www.eia.gov/analysis/transportationfuels/padd5.

[49] From EIA fin. pet. prods. data (*see* note above) and CARB default emission factors (Table 1; www.oal.ca.gov/CCR.htm), except coke emission factor from DOI: 10.1021/es1019965 (SI data).

[50] https://oehha.ca.gov/search/tracking%20and%20evaluation%20of%20benefits%20and%20impacts%20of%20ghg%20limits.

[51] *See* Brody et al., 2009. *Am. J. Public Health;* DOI: 10.2105/AJPH.2008.149088; and Pastor et al., 2010; *Minding the Climate Gap;* https://dornsife.usc.edu/PERE/enviro-equity-CA-cap-trade.

CBE has submitted many detailed comments during previous Scoping Plan proceedings documenting ineffectiveness and harms of pollution trading. Please see many comments submitted to CARB by CBE in earlier Scoping Plan and Cap & Trade regulation proceedings. CBE also supports comments made by CRPE, CEJA, and the EJAC on the Scoping Plan regarding harms of Cap & Trade, need for evaluation of alternatives including Cap & Tax.

Harms and ineffectiveness of Cap & Trade shown in many studies in the European and other pollution trading programs, have been repeated in the California program, as in the previously cited Cushing et all study.

First, California allowed free credits, keeping prices down, and providing a glut of credits. Allowing banking of credits set up years of over-abundance and low prices. And pollution credits and especially offsets allow trading between very different pollution sources (e.g. avoiding cuts in local oil refinery emissions by purchasing far-distant forestry measures). The complex calculations yield dubious results by trying to equate a calculated amount of oil refinery equipment emissions to a calculated amount of forestry protections. Such results are fraught with problems resulting in trading emissions not-equivalent in magnitude, constituency (co-pollutants such as toxics), or location. This is another reason why Direct Reductions are far more effective – when you eliminate a pollution source through direct pollution prevention measures, you know the pollution is gone, and you know the location of the cuts.

Instead, we urge direct emissions cuts and a transformation out of fossil fuels. California has however, set up the system so that many now depend on revenues generated by Cap & Trade. These revenues are still needed, and a Cap & Tax program could much more effectively provide revenues, and provide funding for a Fossil Fuel phaseout / Energy Transformation to clean renewables.

We support a Cap & Tax measure to replace Cap & Trade revenues. California needs a price on carbon that can incentivize behavior changes at firms by sending a strong price signal, while incorporating the full environmental and social costs of carbon emissions. A direct price ensures that California businesses have price certainty and incentives to innovate. It also ensures that revenue stays in-state, without going to traders and projects elsewhere. The price should be set at the social cost of carbon. It should initially be discounted, with adjustments for annual inflation and a set price trajectory of increases to reach the full cost.

V. The Electricity Sector is pivotal & making progress, but we need a No New Gas policy, shut down of existing gas plants, and maximizing Renewables, Demand Response, Energy Storage, Efficiency, and Equity without Pollution Trading

Just Electricity recommendations:

- Plan for a fossil-fuel free grid, with a specific emphasis on environmental justice in siting, operational assumptions, and planning
- Prioritize meaningful community engagement and transparency in electricity system and electricity resource decision-making
- Direct the benefits, especially economic, system resilience, and pollution reduction benefits, of renewable distributed generation in environmental justice communities
- Implement operational controls that reduce pollution impacts of existing electricity system, with a focus on environmental justice communities.

The Electricity Sector is key to fossil fuel phaseout in the state, because the grid can be decarbonized, and it can also support other sectors' decarbonization. Specifically, the electricity grid can provide non-fossil fueled electricity (solar, wind), but can also provide this decarbonized electricity to vehicles, and conversely can use EV batteries for grid storage / balancing.

California authorities have generally adopted the concept of this approach, through the pillars of decarbonization (Aggressive Energy Efficiency, Decarbonize the Grid, and Electrify Transportation and industry). The strategy was first laid out in *The Technology Path to Deep Greenhouse Gas Emissions Cuts by 2050: The Pivotal Role of Electricity,* [52] as the three pillars it identified in order to economically meet 80% GHG cuts. This and later studies demonstrated the economic and technical feasibility, *without Pollution Trading:*

In order to plan and transform our electricity grid, CBE, CEJA (California Environmental Justice Alliance), and coalition partners have taken part extensively in CPUC (California Public Utilities Commission) Long Term Planning and CEC (California Energy Commission) power plant permitting processes, to ensure prioritizing energy procurement according to the state Loading Order (for example with efficiency and renewables first). We have also intervened extensively in these processes and in the legislature, for equitable access of EJ communities to clean energy, as well as to protect communities from unnecessary gas-fired procurement. **We will not attempt to replicate the detailed and extensive comments we have submitted to the CPUC, CEC, and seeking new laws, but instead provide general concepts here. These include:**

- **Stop expanding gas-fired electricity immediately, continue to decarbonize the Electricity Sector:** Despite clear documentation showing the glut of gas-fired power plants in the state costing Californians billions,[53] new plants are still being proposed and approved.
- **Plan to phaseout existing plants** (first – don't replace gaining or Once Through Cooling plants with gas - adhere strictly to the Loading Order and to the extent that replacement generation is needed, prioritize local distributed generation.)
- **Maximize synergistic approaches using different renewables together, including balancing abundant solar by charging EVs,** and through other energy storage, use aggressive energy efficiency, and Demand Response, in line with the state's Loading Order priorities. (The grid can

[52] Williams, et al, *Science,* 2010, 06 Jan 2012: Vol. 335, Issue 6064, pp. 53-59, DOI: 10.1126/science.1208365, http://science.sciencemag.org/content/335/6064/53.full

[53] *Californians are paying billions for power they don't need*, Feb. 5, 2017, http://www.latimes.com/projects/la-fi-electricity-capacity/

help provide electricity for EVs, and EVs can help store extra-abundant solar.) **Out of state electricity must meet California's environmental and environmental justice mandates.**

- **The appeal of sharing electricity beyond California must be informed by vigorous protections to ensure that California's environmental and environmental justice values inhere in any broader system.** Concerns about accounting for GHG emissions from out of state generation have already arisen. It is vital that regardless of where California's electricity is produced or used, the benefits of our transition follow.
- **Distributed generation provides significant system and community benefits** that must be valued and prioritized:
    - Local renewable distributed generation allows targeted generation in load pockets and where it is most needed
    - Local renewable distributed generation avoids transmission costs and the fragility of the aging transmission system
    - Well-designed distributed generation allows for clean grid management. As mentioned above, when paired with Smart Inverters, distributed generation can provide the high-value functions of gas-fired generation to respond to fast-changing grid conditions. When paired with storage, distributed generation can balancing the grid to address the duck chart.
    - Distributed generation can provide local clean energy careers including marketing, installation, maintenance, and many other job categories to build community wealth.
- **Many technical solutions are available to make renewables appear like gas-fired generation for grid support:**
    - **Smart Inverters for rooftop solar** can provide control capabilities include ramp rate, curtailment, power factor (volts-amp reactive support) and on/off functionality. The ability to remotely control an inverter's output characteristics minimizes the adverse impacts of solar power as an *intermittent* source of energy, and allows for increased grid penetration.[54] Germany has required retrofits of its grid to add Smart Inverters, California should get such requirements in early before the even higher coming rooftop solar boom.
    - **Reactive Support** at key locations can replace the need for reactive power gas-fired generators currently provide

[54] For example: Advanced Energy, Laying the Foundation for the Grid-Tied Smart Inverter of the Future, at 5 (2011), *available at* http://solarenergy.advanced-energy.com/upload/File/White_Papers/SEGIS-Laying%20the%20Foundation-2-FINAL.pdf (emphasis added). Many other publications, including utility and FERC statements ascribe such grid support capabilities to Smart Inverters.

VI. Conclusion

CBE appreciates CARB's work on these key issues, and urges the above additional actions.

Sincerely,

Julia May, Senior Scientist, CBE (Communities for a Better Environment)

Greg Karras, Senior Scientist, CBE

Bahram Fazeli, Research and Policy Director, CBE

Roger Lin, Staff Attorney, CBE

Shana Lazerow, Staff Attorney, CBE

Jose Lopez, Staff Researcher, CBE

Attachments

ATTACHMENT A – Refinery Data provided by Cushing et al Study to CEJA

Refinery	Emitter covered GHG emissions, 2013-14 (metric tons CO2eq)	Emitter covered GHG emissions, 2011-12 (metric tons CO2eq)	Change in emitter covered GHG emissions, 2013-14 vs. 2011-12 (metric tons CO2eq	% change relative to 2011-12
Tesoro Refining & Marketing Company LLC - Los Angeles Refinery - Carson	**10,776,883**	8,983,862	1,793,021	**20%**
Tesoro Refining and Marketing Co. - Martinez	**4,778,043**	4,490,437	287,606	**6%**
Phillips 66 Company - Los Angeles Refinery - Carson Plant	1,892,589	1,796,159	96,430	5%
Phillips 66 Company - Los Angeles Refinery - Wilmington Plant	3,933,130	3,852,141	80,989	2%
Phillips 66 Company - Santa Maria Refinery	502,518	479,929	22,589	5%
Kern Oil Refinery	286,515	275,632	10,883	4%
Lunday-Thagard Company	70,102	62,965	7,137	11%
San Joaquin Refining Company	187,437	187,444	-7	0%
Edgington Oil Company	11	461	-450	-98%
Ultramar Inc – Valero	1,870,699	1,927,135	-56,436	-3%
Chevron Products Company - El Segundo Refinery, 90245	6,527,778	6,646,701	-118,923	-2%
Valero Refining Company - California, Benicia Refinery and Benicia Asphalt Plant	5,447,322	5,577,029	-129,707	-2%
Shell Oil Products US – Martinez	8,158,766	8,316,879	-158,113	-2%
Phillips 66 Company - San Francisco Refinery	2,639,333	2,822,075	-182,742	-6%
Paramount Petroleum Corporation Refinery	58,855	253,431	-194,576	-77%
Alon Bakersfield Refinery - Areas 1&2	50,804	322,112	-271,308	-84%
ExxonMobil Oil Corporation - Torrance Refinery	5,864,802	6,152,615	-287,813	-5%
Chevron Products Company - Richmond Refinery, 94802	8,034,694	8,407,150	-372,456	-4%

ATTACHMENT B – Tesoro & AQMD Investor Statements about LA Refinery Crude Oil Switch

Tesoro tells people in LA the refinery expansion is for clean air	**But Tesoro tells investors it is switching the LA Refinery to N. Dakota Bakken crude oil.**
Nature of the Project is for Clean Air: "Pending permitting and approvals, the Los Angeles Refinery Integration and Compliance (LARIC) project will improve air quality, substantially reduce local emissions, upgrade refinery equipment and provide significant benefits to the local economy." EIR: **Draft EIR covers up the Nature of the Project & Crude Oil Switch for Tesoro:** "While the proposed project does not affect the types of crude oils processed at the Refinery and, thus, will not have impacts due to changes in crudes, the proposed project may increase downstream unit processing rates on a monthly or daily basis."[61]	**Nature of the Project is a Crude Oil switch on the West Coast & specifically in the LA Refinery to N. Dakota Bakken**:[55] **Paul Y. Cheng - Barclays Capital - Analyst** Okay. In Carson [Los Angeles], I think before being acquired by you guys, that they were running largely you said[56] ANS, maybe 100,000 barrel per day. And then maybe another 100,000 of the Iraqi Basra[57]. Is the crude slate changed now? Or that is essentially secured by the same crude slate as in the past? **Gregory J. Goff – Tesoro Corporation – President & CEO** Basically the same. We are running some different crudes there, but not material differences at this point in time. It is in our plans to do that. Basically what you described, is the bulk of the crude supply the two sources what is happens in the Los Angeles refinery today. **Paul Y. Cheng - Barclays Capital - Analyst** Right. Greg, how quickly that you think you may start to be able to change the crude slate to do that?[58] **Gregory J. Goff – Tesoro Corporation – President & CEO – "The first thing, our intention at the Port of Vancouver to be able to do that."** (emphasis added) **Paul Y. Cheng - Barclays Capital - Analyst** You have to wait until the Savage terminal's[59] up and running before you can actually do that? **Gregory J. Goff – Tesoro Corporation – President & CEO** That would allow us to move the most significant volume right now if we do that. We are looking at other things on an ongoing basis to be able to move crudes there. But we have a number of things that we're looking at, but **that is the primary way that we want to be able to improve crude supply cost at the Los Angeles facility.** (emphasis added) --- Most recently, Tesoro confirmed its plans to import crudes from the Vancouver Terminal to the Los Angeles Refinery in response to a question on the connection between the integrated Los Angeles Refinery and the Vancouver Terminal: **Gregory J. Goff – Tesoro Corporation – President & CEO -** "We have said that once Vancouver Energy is up and operating, we'll use crude oil into the facility to supply our west coast operations but there's no connection to the permits."[60]

[55] Thomson Reuters Streetevents Edited Transcript, TSO – Q1 2014 Tesoro Corporation Earnings Conference Call, May 1, 2014 (Q1 2014 Tesoro Earnings Call), Barclay Capital questions at pp. 12-13. There are some discrepancies between the Thomson Reuters transcript and the original webcast. The recording of the original webcast is available.
[56] "you said" mistranscribed as "essential"
[57] "Basra" mistranscribed as "basket".
[58] "slate to do that" mistranscribed as "slated to buy it?"
[59] "Savage terminal" mistranscribed as "terminal".
[60] Tesoro, 2016 Tesoro Corporation Earnings Conference Call Recording, May 5, 2016, 41:39 – 41:50 minutes, Exhibit 5a; Available at: http://edge.media-server.com/m/p/56vao56c; Thomson Reuters Streetevents Edited Transcript, TSO – Q1 2016 Tesoro Corporation Earnings Conference Call, May 5, 2016, p. 14.
[61] Draft EIR, at p. 4-2

The Pipeline and Hazardous Materials Safety Administration
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Safety Alert -- January 2, 2014

Preliminary Guidance from OPERATION CLASSIFICATION

The Pipeline and Hazardous Materials Safety Administration (PHMSA) is issuing this safety alert to notify the general public, emergency responders and shippers and carriers that recent derailments and resulting fires indicate that the type of crude oil being transported from the Bakken region may be more flammable than traditional heavy crude oil.

Based upon preliminary inspections conducted after recent rail derailments in North Dakota, Alabama and Lac-Megantic, Quebec involving Bakken crude oil, PHMSA is reinforcing the requirement to properly test, characterize, classify, and where appropriate sufficiently degasify hazardous materials prior to and during transportation. This advisory is a follow-up to the PHMSA and Federal Railroad Administration (FRA) joint safety advisory published November 20, 2013 [78 FR 69745]. As stated in the November Safety Advisory, it is imperative that offerors properly classify and describe hazardous materials being offered for transportation. 49 CFR 173.22. As part of this process, offerors must ensure that all potential hazards of the materials are properly characterized.

Proper characterization will identify properties that could affect the integrity of the packaging or present additional hazards, such as corrosivity, sulfur content, and dissolved gas content. These characteristics may also affect classification. PHMSA stresses to offerors the importance of appropriate classification and packing group (PG) assignment of crude oil shipments, whether the shipment is in a cargo tank, rail tank car or other mode of transportation. Emergency responders should remember that light sweet crude oil, such as that coming from the Bakken region, is typically assigned a packing group I or II. The PGs mean that the material's flashpoint is below 73 degrees Fahrenheit and, for packing group I materials, the boiling point is below 95 degrees Fahrenheit. This means the materials pose significant fire risk if released from the package in an accident.

As part of ongoing investigative efforts, PHMSA and FRA initiated "Operation Classification," a compliance initiative involving unannounced inspections and testing of crude oil samples to verify that offerors of the materials have been properly classified and describe the hazardous materials. Preliminary testing has focused on the classification and packing group assignments that have been selected and certified by offerors of crude oil. These tests measure some of the inherent chemical properties of the crude oil collected. Nonetheless, the agencies have found it necessary to expand the scope of their testing to measure other factors that would affect the proper characterization and classification of the materials. PHMSA expects to have final test

results in the near future for the gas content, corrosivity, toxicity, flammability and certain other characteristics of the Bakken crude oil, which should more clearly inform the proper characterization of the material.

"Operation Classification" will be an ongoing effort, and PHMSA will continue to collect samples and measure the characteristics of Bakken crude as well as oil from other locations. Based on initial field observations, PHMSA expanded the scope of lab testing to include other factors that affect proper characterization and classification such as Reid Vapor Pressure, corrosivity, hydrogen sulfide content and composition/concentration of the entrained gases in the material. The results of this expanded testing will further inform shippers and carriers about how to ensure that the materials are known and are properly described, classified, and characterized when being shipped. In addition, understanding any unique hazards of the materials will enable offerors, carriers, first responders, as well as PHMSA and FRA to identify any appropriate mitigating measures that need to be taken to ensure the continued safe transportation of these materials.

PHMSA will share the results of these additional tests with interested parties as they become available. PHMSA also reminds offerors that the hazardous materials regulations require offerors of hazardous materials to properly classify and describe the hazardous materials being offered for transportation. 49 CFR 173.22. Accordingly, offerors should not delay completing their own tests while PHMSA collects additional information.

For additional information regarding this safety alert, please contact Rick Raksnis, PHMSA Field Services Division, (202) 366-4455 or E-mail: Richard.Raksnis@dot.gov. For general information and assistance regarding the safe transport of hazardous materials, contact PHMSA's Information Center at 1-800-467-4922 or phmsa.hm-infocenter@dot.gov.