Dr. Steve Cliff
Chief, Climate change Program Evaluation Branch
California Air Resources Board
1001 "I" Street, Sacramento, CA, 95812

October 14, 2013

Subject: Environmental Defense Fund comments on the Proposed Amendments to the Cap-and-Trade Program Released September 4, 2013.

Dear Dr. Cliff,

On behalf of Environmental Defense Fund ("EDF"), please accept these comments regarding the proposed amendments to the Cap-and-Trade Program released on September 4, 2013. The comments below are similar to and updated from comments EDF submitted regarding the July 18, 2013, workshop on proposed amendments to the cap-and-trade program. We appreciate the opportunity to submit comments on this cornerstone piece of AB32 which will spur innovation, promote investment and job growth, and reduce greenhouse gas pollution. From our standpoint, the cap-and-trade program is off to a solid start and we are supportive of this programmatic review and amendment process that the California Air Resources Board ("CARB") has led to engage the public in a dialogue to revise and strengthen the regulation.

By way of introduction to this letter, EDF supports the majority of regulatory amendments proposed by CARB, including, updating allowance allocation for new sectors, new CITSS functionality, revising cost containment and "legacy contracts", and the new section for natural gas suppliers. We furthermore support the continued commitment to include transportation fuels in the cap-and-trade regulation –a critical part of the overall program success. We offer comments on some of these changes in this letter.

However, in addition to commenting on various proposed amendments in this letter, we also have serious reservations on the proposed amendment to shift transition assistance factors for the state's largest point sources of pollution: oil refineries. While we fully agree that ARB should take the necessary steps to minimize leakage, as required by AB 32, new research on the topic is not completed and cannot justify a continued level of 100% assistance factor for industry classifications in the second compliance period. EDF recognizes that California businesses face the real challenge of figuring out how to comply with climate change regulations and compete with out-of-state businesses that don't have similar requirements, but certain sectors like the petroleum refineries simply don't need continued assistance.

Our comments fall under the four topic areas below:

EDF Comment Topics:

1. Offset Protocols.....2
2. Cost Containment.....3
3. Allowance Distribution to the Natural Gas Sector.....8
4. Extending Transition Assistance.....10

1. Offset Protocols

Recommendations: 1) Adopt the Rice Cultivation Protocol by the start of the 2014 growing season. 2) Create a mechanism for offset aggregation in the agricultural offset sector.

Consideration of New Offset Protocols: Rice cultivation and mine methane capture

Offsets are a critical piece of a cap-and-trade market. They can deliver vast economic and environmental benefits for landowners including farmers, ranchers, and foresters who participate in the offset market by implementing emission reduction practices and generating sellable credits. Offsets have tremendous potential to inspire innovation in these uncapped sectors of the economy that are not directly included in the program. These practices provide high quality, near term reductions in greenhouse gases.

In addition to inspiring additional reductions outside capped sectors, offsets allow regulated companies to take advantage of cost effective reductions being made elsewhere in the economy. Thus, even at limited quantities, offsets can reduce the overall compliance costs of cap-and-trade by a significant amount. Reputable projections suggest that a California cap-and-trade program that includes offsets will likely cost less than $20/ton of emissions, while a program without offsets may cost more than $100/ton of emissions. Based on these scenarios, even offsets limited to 8% of obligations can reduce statewide program compliance costs by more than $200 billion between 2013 and 2020[1].

Although CARB has adopted four compliance protocols to date, these protocols are not expected to be able to generate enough credits to ensure full availability under the program.[2] Furthermore, the leading offset registries have undertaken rigorous scientific efforts to develop other high-

[1] EDF "Cost Containment through Offsets in the Cap-and-Trade Program under California's Global Warming Solutions Act," July 2011. http://www.edf.org/sites/default/files/EDF%20AB%2032offsetsmodelingmemo%20final2_updated_3Jan2012_v2.pdf

[2] America Carbon Registry "Compliance Offset Supply Forecast for California's Cap-and-Trade Program (2013-2020), September 2012. http://americancarbonregistry.org/acr-compliance-offset-supply-forecast-for-the-ca-cap-and-trade-program

quality accounting protocols, such as protocols for nitrogen management, restoration of wetlands, and avoided conversion of grasslands. These protocols can generate valuable emission reductions and investments in un-capped sectors.

EDF supports the rigorous process CARB has engaged in to develop rice cultivation and mine methane protocols. Specifically on the Rice Cultivation Protocol, CARB has undertaken a detailed and thoughtful review of the existing protocols and considered the concerns of all stakeholders. We strongly encourage CARB to adopt this protocol prior to the start of the 2014 growing season in order to provide a robust signal to farmers that they can receive revenue for changes in their growing practices.

Creation of Mechanism for Offsets Aggregation in the Agricultural Sector

As the largest uncapped sector of California, agriculture presents a significant opportunity to generate valuable greenhouse gas emission reductions. As stated above, EDF applauds CARB's development of the Rice Cultivation Protocol.

For agricultural offset projects to be effective though, farm-level reductions need to be aggregated into larger, multi-landowner projects. Aggregation is one of if not the most important factor in the development of agricultural offset projects that are cost-effective and allow for the engagement of the agricultural sector in California's cap-and-trade program.

EDF encourages CARB to adopt future modifications to the cap-and-trade regulations which allow for the aggregation of agriculture offset projects. Several organizations, including EDF, have developed and provided recommended edits to the regulations. CARB should consider these edits as a part of the adoption of the Rice Cultivation Protocol early next year. Without inclusion of aggregation rules, widespread adoption of offset projects from the agricultural sector will be extremely difficult. EDF looks forward to continued discussions and providing feedback to CARB on this important issue.

EDF Staff Lead: Robert Parkhurst, rparkhurst@edf.org.

2. Cost Containment

Recommendations: 1) Adopt staff's proposal to borrow a limited number of allowances as needed to refill the APCR. 2) If additional cost-containment measures are needed in future, consider sectoral-based offsets if approved to replenish the APCR rather than a hard price cap.

On the issue of cost containment in California's cap and trade program, we'd first like to emphasize – as we have in previous letters to CARB and to the Emissions Market Assessment Committee (EMAC)[3] – that the program currently includes an array of well-designed cost

[3] *See* EDF letter to CARB Re: Cost Containment of the AB 32 Cap-and-trade regulation, dated July 9, 2013;

containment provisions. Nevertheless, we understand CARB's interest in considering additional options given concerns over potential suspension of the program if prices rise unexpectedly high. To this end, we support CARB's proposed regulatory change to allow borrowing of allowances from future vintage years at the highest price tier of the Allowance Price Containment Reserve. The proposal will help address price concerns, while still ensuring that the overall environmental integrity of the program remains intact. Finally, if additional or alternative cost containment provisions continue to be considered, maintaining the environmental integrity of the program remains of the utmost importance and any new changes should be implemented such that disruption to the program, and to market player expectations, is minimal, given the importance of regulatory certainty to the program's success.

Importance of maintaining a steady program and existing cost containment provisions

As effectively laid out in CARB's June 25, 2013 paper,[4] California's cap-and-trade program currently includes numerous cost-containment features including provisions for allowance banking, multiyear compliance periods, a broad program scope, an auction price floor, emissions offsets, administrative allocation of allowances, direct complimentary regulations that reduce emissions in capped sectors and an allowance price containment reserve (APCR).

Although we are aware of the possibility that even with the suite of cost containment features already built into the program, external or otherwise improbable circumstances may transpire that cause program costs to rise beyond expected price ranges, those market conditions are unlikely to occur. Rather, based on our analysis of the market conditions and cost containment features in AB32 cap-and-trade regulation as well as lessons derived from other cap-and-trade programs, features currently embedded in the program make it highly unlikely that allowance prices will escalate towards the extreme scenarios where experts are concerned that political pressure could force programmatic modification.

In 2011, EDF conducted economic modeling[5] that found, as designed, there is an 85% chance that the price containment reserve will not be needed at all, and that even if needed, it is highly unlikely the reserve would ever be exhausted. Even if only half of allowable offsets are available, we estimated that there is only a 1/10 of a percent chance that prices would rise above $40 per ton.

EDF letter to EMAC Re: EDF's response to EMAC's September 20, 2012 issue papers and recommendations concerning AB 32 cap-and-trade regulation price containment and linkage, dated November 16, 2012.

[4] CARB "Policy Options for Cost Containment in Response to Board Resolution 12-51," June 25, 2013. http://www.arb.ca.gov/cc/capandtrade/meetings/062513/arb-cost-containment-paper.pdf

[5] *See* EDF's "Cost Containment through Offsets in the Cap-and-Trade Program under California's Global Warming Solutions Act," July 2011. http://www.edf.org/sites/default/files/EDF%20AB%2032offsetsmodelingmemo%20final2_updated_3Jan2012_v2.pdf

CARB's own modeling[6] predicts that the current program design will result in the environmental goals being met at low cost. It is only under unlikely sensitivity scenarios where either offsets are limited or complimentary measures achieve significantly less reductions than anticipated, that additional cost containment measures could be needed. Another analysis[7] from Severin Borenstein of UC Berkeley and EMAC shows that the probability is small of triggering and exhausting the allowance reserve (APCR) – and in fact, it is much more likely that prices remain low: at or near the price floor. Another reason we expect allowance prices to remain in check stems from examples provided by other trading programs such as the European Union Emissions Trading System (EU ETS), the Regional Greenhouse Gas Initiative, and the U.S. Acid Rain program. Allowances prices have been much lower than expected in these programs[8]; emission reductions have occurred faster and more cheaply than many thought possible prior to the program start. We expect the same to be true for California's program – a product of a well-designed market based regulation.

Proposed regulatory change to allow borrowed allowances to replenish the Allowance Price Containment Reserve and the importance of maintaining environmental integrity

While we believe additional price containment measures are unnecessary, we understand that there are concerns over unexpectedly high prices, and a push towards including additional cost containment provisions. As outlined in the July 2013 Discussion Draft[9] and July 18th Workshop presentation[10], CARB's proposal would make available an additional source of allowances for the Allowance Price Containment Reserve.[11] Starting in 2015, 10% of future vintage allowances would be made available at the highest price tier of the Reserve if needed to satisfy demand.

---

[6] *See* Case 1 of Updated Economic Analysis of California's Climate Change Scoping Plan: California Air Resources Board, March 24, 2010. See Case 1 of Updated Economic Analysis of California's Climate Change Scoping Plan: California Air Resources Board, March 24, 2010. http://www.arb.ca.gov/cc/scopingplan/economics-sp/updated-analysis/updated_sp_analysis.pdf

[7] Borenstein, Severin. "Resource Shuffling, Complementary Measures and Competitiveness under California's Cap and Trade Market," http://www.rff.org/Documents/Events/MISTRA-2013-May-7/BorensteinRFFconf130507.pdf

[8] *See* Ellerman, A. Denny, Frank J. Convery, Christian De Perthuis. 2010. *Pricing Carbon: The European Union Emissions Trading Scheme*. Cambridge University Press.
See also Keohane, Nathaniel and Gernot Wagner, Judge a carbon market by its cap, not its prices, July 16, 2013 http://www.ft.com/cms/s/0/de783c62-ee23-11e2-816e-00144feabdc0.html
See also Rob Stavins, Low Prices a Problem? Making Sense of Misleading Talk about Cap-and-Trade in Europe and the USA, April 25, 2012 http://www.robertstavinsblog.org/2012/04/25/low-prices-a-problem-making-sense-ofmisleading-talk-about-cap-and-trade-in-europe-and-the-usa/
See also U.S. Environmental Protection Agency, Clean Air Market Programs, Cap and Trade: Acid Rain Program Results http://www.epa.gov/capandtrade/documents/ctresults.pdf

[9] CARB Proposed Amendments to the California Cap-and-Trade Program Discussion Draft, July 2013 http://www.arb.ca.gov/cc/capandtrade/meetings/071813/ct_reg_2013_discussion_draft.pdf

[10] CARB Proposed Changes to the California Greenhouse Gas Cap-and-Trade Regulations, July 18, 2013 http://www.arb.ca.gov/cc/capandtrade/meetings/071813/workshoppresentation.pdf

[11] The value of an allowance reserve in a cap and trade program has been well documented.
See Murray, Brian C., Richard G. Newell, and William A. Pizer. Resources for the Future (RFF) Discussion Paper: "Balancing Cost and Emissions Certainty: An Allowance Reserve for Cap-and-Trade," (RFF DP 08-24), July 2008.
http://www.rff.org/documents/RFF-DP-08-24.pdf

These allowances would first be drawn from the latest vintage(s) (furthest in the future) – 2020, then 2019, etc as the regulation currently stands. Further, the regulatory change as written would automatically allow for borrowing from even later periods once new future emission reduction targets are put in place.

Generally speaking, allowing for increased borrowing as a cost containment measure is aligned with provisions included in the EU-ETS as well as with cost containment provisions suggested by EDF (as alternatives to a price cap) for California's program in previous letters[12]. The provision as proposed to allow borrowing to replenish the Reserve has several advantages to other options like hard price caps.

First, the proposal places high priority on ensuring the environmental integrity of the program (as directed by the Board's Resolution) by maintaining its core feature: the hard declining cap. While this provision allows for additional allowances in particular years if needed, by replenishing the Reserve with borrowed allowances, it ensures the same cumulative limit on emissions defined by the cap over the length of the program.

Second, by allowing borrowing only at the highest price tier of the APCR, the proposal ensures that this provision is used only when absolutely needed – during conditions of unusually high price spikes or unexpected market conditions.

Of course, there is an inherent tradeoff associated with allowing for increased borrowing since while it can help contain costs in the years when borrowed allowances are used, it increases the stringency of the cap in future years, which may mean pushing higher prices (and emission reductions) down the road. However, this particular provision allows for increased borrowing only at the highest price tier of the Reserve (making it unlikely that these allowances would be used) and further, it allows for borrowing of only 10% of each future year's allowances, reasonably limiting the extent to which future years' cap stringency would be increased. Further, as we approach these future years (2015-2020), we hope that a post-2020 program will be put in place, making borrowing from even later years possible. In other words, this provision provides important regulatory certainty early on even as it anticipates and remains flexible to potential extension of the program.

Two additional considerations CARB should take into account with respect to the proposed cost containment mechanism involve the post-2020 program. First, if these future allowances are in fact borrowed, it should not impact the stringency of the longer term cap – and any borrowed credits must be deducted from the economy wide cap. Second, if emission reductions are borrowed from future compliance periods past 2020, interest should be required (particularly for those of vintages father into the future) and additional credits should be surrendered at some

[12] *See* Letter from EDF to Richard Cory and Steve Cliff dated July 9, 2013: Cost Containment of the AB 32 Cap-and-trade regulation. July 9, 2013, http://www.arb.ca.gov/lists/com-attach/25-reportcostcontain-ws-Wj8BYwFmAg5QNQBv.pdf
Also see Letter from EDF to the AB 32 Emissions Market Assessment Committee (EMAC) dated November 16, 2012: EDF's response to EMAC's September 20, 2012 issue papers and recommendations concerning AB 32 cap-and-trade regulation price containment and linkage.

point in the future. Interest on borrowing was envisioned as part of the House-passed Waxman-Markey cap and trade legislation in 2009 (at an 8% interest rate for allowances borrowed several years into the future)[13].

Potential for Future Additional Cost-Containment Measures

Although EDF supports the proposed regulatory modification for cost containment because it maintains the same overall quantity of allowances in the program, we understand that some will argue that it might not be sufficient to contain costs - especially if unexpected market conditions occur such that prices stay high for sustained periods of time. Again, such a situation seems highly unlikely due to the cap and trade program's numerous existing cost containment features. This new provision will further serve to contain costs while maintaining the environmental integrity of the program, which is of the utmost importance.

Because there is the option to refill the APCR with allowances borrowed from future vintage years, there is a relative certainty that the APCR will not be fully utilized over the next several years. This should provide California ample opportunity to consider if any other cost containment measures are needed and feasible to protect the program as we approach 2020. EDF believes that there are two alternatives which are much more desirable from the perspective of environmental integrity than a hard price cap: 1) extending the cap-and-trade program beyond 2020 which would allow for greater borrowing as needed and 2) refilling the APCR as needed with offsets, including sector-based international offsets.

We understand that neither of these additional options for cost containment is available at this time and that both would require significant further policy development. Specifically, with regard to refilling the APCR with international sector-based offsets, EDF would not support this measure until California had considered the environmental rigor of these offsets and had adopted a protocol pursuant to current California law. However, based on findings by the REDD Offsets Working Group (ROW)[14], EDF believes there is a strong possibility that sector-based offsets like REDD (Reducing Emissions from Deforestation and Forest Degradation) may have a role to play in California's cap-and-trade program as envisioned by the current regulation. Furthermore, existing progress in Acre, Brazil, suggests that REDD credits likely will not face the supply constraints that domestic offset are projected to have[15]. EDF would only support refilling the

---

[13] H.R. 2454 in the 111th Congress 1st Session; Section 725(c)(2)

[14] REDD Offsets Working Group "California, Acre, and Chiapas partnering to reduce emissions from deforestation: Recommendations to conserve tropical rainforests, protect local communities and reduce state-wide greenhouse gas emissions," July 2013 http://greentechleadership.org/documents/2013/07/row-final-recommendations-2.pdf

[15] *See* America Carbon Registry "Compliance Offset Supply Forecast for California's Cap-and-Trade Program (2013-2020), September 2012. http://americancarbonregistry.org/acr-compliance-offset-supply-forecast-for-the-ca-cap-and-trade-program, regarding projected shortfall in supply for existing offset protocols.

EDF is conducting analysis regarding the potential supply of REDD credits from Acre, Brazil which suggest there should be ample supply of credits to meet California demand if California adopted a REDD protocol from Acre. This analysis is forthcoming and is based on modeling derived from information available from: Amazon Environmental Research Institute (IPAM), "Acre's Progress Towards Jurisdictional REDD" 2012

APCR with offsets if they were sold at the APCR rate rather than the market rate. California could then consider how to use the price premium to further meet the objectives of AB 32.

EDF looks forward to working closely with ARB to consider these and related options should they become necessary.

EDF Staff Leads: Tim O'Connor, toconnor@edf.org or Erica Morehouse, emorehouse@edf.org.

3. Allowance Distribution to the Natural Gas Sector

Recommendation: Support the partial use of a consignment auction in the natural gas sector but recommend a 50% level of consignment to start with ramping up to 100% consignment by 2020 rather than the proposed 25% level ramping up to 50%.

EDF generally supports the hybrid approach to allocating allowances to the natural gas sector that staff proposes wherein utilities receive a free allocation of allowances and must consign some of those allowances to auction with the proceeds going to benefit rate payers subject to oversight from the Public Utilities Commission. We strongly support the requirement that "any revenue returned to ratepayers must be done in a non-volumetric manner" Sec. 95893(d)(3).

However, although EDF supports the staff proposal to use a consignment auction, we urge CARB to consider whether the level of consignment should be increased from currently proposed escalating level – meaning natural gas utilities and rate payers receive less transition assistance in the early program years and a stronger carbon price signal in later years. As proposed, the ramp up starts at 25% and increases to 50% in 2020. As an alternative, EDF recommends CARB consider an escalating consignment that starts at 50% in 2015, escalating to full auction (100%) in 2020.

We believe that this approach is consistent with the policy objectives outlined by staff at the natural gas allocation workshop, including encouraging GHG emission reductions, maintaining equity and consistency among participants and sectors under the cap, and ensuring consistency with California's long-term climate and clean energy goals.

As discussed in a prior joint letter to CARB, the approach has several benefits which include:

Providing allowance value to customers in a manner that rewards ongoing energy efficiency improvements and conservation to reduce GHG emissions

---

http://www.gcftaskforce.org/documents/acre's_progress_towards_jurisdictional_redd.pdf and the Electric Power Research Institute, "Overview of Subnational Programs to Reduce Emissions from Deforestation and Forest Degradation" July 2012 http://www.epri.com/abstracts/Pages/ProductAbstract.aspx?ProductId=000000000001023811.

Both the consignment of some allowances to auction and the requirement that revenue is not returned to ratepayers volumetrically are important factors in incentivizing energy efficiency and GHG reductions. The requirement to consign some allowances to auctions ensures that rates will reflect a carbon price signal. This signal is critical to incentivizing energy efficiency and GHG reductions. It is also critical that every cap-and-trade sector, including natural gas, sees a price signal in order to ensure a fully functioning market that efficiently invests in the most cost effective reductions. Similarly, returning revenue volumetrically to rate payers could reduce the incentive to conserve. When any revenue return to customers is independent of natural gas usage, the incentive to conserve is preserved even as the impacts of any rate increases are mitigated.

Managing customer bill impacts by providing transition assistance and reducing customer exposure to price volatility

The need to incentivize reductions through a price signal is appropriately balanced against the need to provide transition assistance to natural gas customers at the beginning of the program. We recognize that investments in energy efficiency that lead to GHG reductions do not necessarily occur overnight. Providing a gradual ramp up in carbon price can leave customers with the resources they need to make these investments early. Ensuring that utilities have a pool of free allowances to utilize directly for compliance can also ensure that they are buffered from any allowance price swings and can provide a consistent rate to customers that increasingly reflects the full price of carbon emissions.

Ensuring oversight, transparency, and accountability with regard to the allocation of allowance value to natural gas customers

As in the electricity sector, consigning allowances to auction ensures that there is a pool of revenue that can be used for the benefit of natural gas ratepayers. Since the Public Utility Commission will provide guidelines for the use of this revenue, there will be an opportunity for stakeholders to weigh in on the important decisions involved in utilizing the revenue to benefit rate payers while maintaining important incentives for reducing GHG emissions. Similarly, the revenue from consigned allowances provides an additional opportunity for protecting low-income rate payers who must spend a disproportionate amount of their income to meet their energy needs.

For all of these reasons EDF generally supports the hybrid free allocation / consignment approach for allowance distribution to the natural gas sector.

EDF Staff Leads: Tim O'Connor, toconnor@edf.org or Erica Morehouse, emorehouse@edf.org.

4. Extending Transition Assistance: Table 8-1 - Shifting the Assistance Factor Change by One Compliance Period

Recommendation: Reject the extension of transition assistance to the refinery sector because shifting industrial assistance factors to protect petroleum refineries in California from economic and emissions leakage is unnecessary, and may lead to unfair profits at the expense of California consumers.

While we understand that some California businesses face the real challenge of complying with California's climate change regulations while competing with out-of-state businesses that do not have similar requirements, this is not the case for *all* industries. Accordingly, while EDF takes no issue with the extension of transition assistance for most industries pending the completion of analysis on whether such relief is appropriate, we oppose CARB's proposed regulatory change to maintain 100% assistance for the petroleum refinery sector.

At the outset of the cap-and-trade program design discussions, EDF supported transition assistance for the first compliance period. This balanced approach recognized that California, as a first mover state for comprehensive carbon reductions, must also make sure that in-state businesses are able to compete in the increasingly globalized market for products and services. At that time, the declining assistance factor in the second and third compliance period made sure businesses saw the transition assistance as a short term item – yielding an increasing incentive to modernize operations and increase efficiency.

By the time the second compliance period starts in 2015, AB 32 will have been in existence for eight years, and cap-and-trade in operation for three. As such, large businesses with sufficient capabilities will have had ample time to prepare for the compliance obligations in cap-and-trade, and additional transition assistance is not warranted. Such is the case with the petroleum refining sector.

Accordingly, EDF recommends keeping the current regulatory design until leakage research analysis commissioned by CARB is concluded. Without justifiable results, shifting of assistance factors is premature.

In addition to not being needed, continued distribution of free allowances has the potential to create windfall profits for the state's largest polluters at the expense of California consumers.

The below arguments further explain why continued distribution of free allowances in this second compliance period and potentially the third is not necessary for transition risk or emissions leakage risk for the petroleum refinery sector.

First, petroleum refineries are at little risk of leakage because the costs of transportation and adapting to California fuel standards make it very difficult for out-of-state producers to compete

with in-state refineries.[16] A report from the LA Harbor Department and U.S. Army Corps of Engineers supports this point.

> *"Refineries are primarily located in the Bay Area, the Bakersfield area of Central California, and the Lost Angeles Basin in Southern California. Crude pipelines only serve intrastate flows and* ***no crude pipelines bring crude or products from out of state.…only a limited number of refineries in the world (mostly in California) are currently capable of producing products specific to California."*** [17]

California refineries have already invested the capital necessary to serve the needs of the California market, totaling close to $5.8 billion for facility upgrades.[18] As the eighth-largest economy in the world and the most populous state in the country, California represents a large demand for refinery products. Since California refineries are among the few that can supply this market, there is little risk that they would decrease their operations and that the state would begin to import products at the expense of in-state facility closures.

Second, several pieces of evidence exist to support the idea that the dominant position of California refineries means that they are likely to be able to pass on a substantial portion of any cost increases incurred by the cap and trade regulation – even if those costs are small – because of existing cost containment mechanisms included in the regulation.

For example, a well circulated 2009 analysis prepared for ConocoPhillips by the consulting firm NERA Economic Consulting uses a demand elasticity of -0.5 to support a finding that the cost pass-through rate is 50% for refined petroleum products.[19]

Another report by analysts at the Federal Reserve Bank of Cleveland estimated that 96% of the variation in oil prices is passed on to consumers in gas prices at the pump.[20]

Further, comments in this rulemaking record submitted by Dr. Charles Mason argue that:

> *"policy adjustment under consideration is unlikely to be effective at preventing California refiners from shutting down any refinery – and therefore not an appropriate or effective mechanism for transition assistance."*[21]

---

[16] Economic Allowance Allocation Committee. 2010. Allocating emissions allowances under a California cap-and-trade program. Recommendations to the
California Air Resources Board and California Environmental Protection Agency. March, p. 46.
[17] From the Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR (published by the Environmental Management Division of the LA Harbor Department and the U.S. Army Corp of Engineers in 2008).
[18] "California's Oil Refineries." http://energyalmanac.ca.gov/petroleum/refineries.html, October 8, 2013.
[19] NERA Economic Consulting, "Market Conditions and the Pass-through of Compliance Costs in a Carbon Emission Cap-and Trade program," 2009.
[20] Andrea Pescatori and Beth Mowry, "The Pass-Through of Oil Prices to Gasoline Prices," Economic Trends, Federal Reserve Bank of Cleveland, February 2008.
[21] Letter to Steve Cliff from Dr. Charles Mason, August 2, 2013, Proposed Amendments to the AB 32 Cap-and-Trade Program: The Relative Size of Increased Allowance Gifts to Refineries and the Effect on Emissions and

We estimate the total giveaway value through 2020 to be between $550 million and $750 million depending on future price per allowance[22]. This allowance value represents money that otherwise would be used to fund GHG reductions throughout California, with a specified amount going to investments in the state's most disadvantaged communities. Accordingly, although staff proposed extending transition assistance, "in order to ensure consumers are not negatively impacted by the Program;"[23] the current proposed modification will likely have the opposite effect of reducing the benefits to Californians. Rather than helping consumers, this proposed giveaway will provide additional money to refiners with no restrictions on use or obligations to cut pollution on site.

Third, even if refiners were unable to pass along the entire cost to the consumers, our calculations estimate the giveaway is small compared to the operating profits from these refineries. Accordingly, as currently designed (with declining transition assistance in 2015), the program will have little, if any, effect on refinery competitiveness or decision making for leakage considerations. As stated previously, we estimate the total give away value through 2020 to be between $550 million and $750 million depending on future price per allowance. To put this amount in perspective, per barrel of gasoline, the allowance value is likely between 1% and 2% of the operating profits for these refineries.[24] This is a small fraction of a multi-billion dollar industry and is unlikely to make them exit the state.

Fourth, as admitted in a written memo produced by the Analysis Group and commissioned by the Western States Petroleum Association (WSPA), even refining sector experts agree that free allocation of cap-and-trade credits is not necessary for reducing leakage.[25] The memo examines economic and emissions leakage in California and offers several recommendations to minimize leakage including linkage, banking/borrowing, multi-year compliance periods, offsets, limiting costly complementary measures and border adjustments. Notably missing is the direct recommendation that distribution of free allowances would prevent leakage. On the contrary, the memo says:

> "*Free allowance allocations that are fixed or independent of sources' decisions can compensate sources for reductions in asset values from GHG reductions policies, but they are unlikely to appreciably affect the extent of leakage….*

Economic Leakage, *Available* at: http://www.arb.ca.gov/lists/com-attach/57-cap-trade-draft-ws-B2pTNFEjUGxVPVcI.pdf

[22] See Appendix A for calculation explanation

[23] See CARB PROPOSED AMENDMENTS TO THE CALIFORNIA CAP ON GREENHOUSE GAS EMISSIONS AND MARKET-BASED COMPLIANCE MECHANISMS, September 4, 2013. http://www.arb.ca.gov/regact/2013/capandtrade13/capandtrade13isor.pdf

[24] See Appendix B for calculation explanation

[25] *See* Analysis Group Comments on Leakage Memo, May 28, 2009. http://www.arb.ca.gov/cc/capandtrade/meetings/041309/apr13pcanalgrp.pdf

Free, regularly updating allocation of allowances based on output levels can reduce leakage, but it can also distort incentives and increase the total costs of achieving GHG reduction goals…."

Fifth, although the guarantee of emissions reductions under AB 32 is achieved by the declining overall emissions limit and not by auction of credits, it is well documented that auctions have an important role in making the overall program work effectively and protect Californians. A letter sent to Governor Jerry Brown by a group of 56 well respected economists clarifies this point:

"*Whether an industry operates in a perfectly competitive market or otherwise, there is always the potential for windfall profits from free allocation. In most situations businesses are able to pass the market value of allowances through to consumers, even though they themselves received allowances for free. This is what happened in the EU's wholesale electricity market*[26]*. Short of fundamental market reform, the easiest step to reduce the potential for such undue profits is to auction allowances, a step the EU has since taken."*[27]

While the electric utilities must buy their allowances and return revenues to the benefit of their ratepayers, under this proposed amendment, oil companies will continue to receive allowances for free, paid for by taxpayers, while simultaneously passing along the value of those credits as additional costs to their customers. Thus, refiners will get free credits and additional profit from increased prices at the pump. By getting a free pass, without any strings attached, refiners will have little incentive to invest in pollution reducing measures.

Sixth, recent petroleum refinery emissions data do not demonstrate a need for continued assistance in the second compliance period – transition is already occurring.

EDF analyzed CARB's recently released 2011 emissions data showing that 11 of the state's refineries logged significant reductions in their greenhouse gas pollution between 2010 and 2011 (see figure 1).[28] These reductions were not a result of facilities suspending or cutting production through voluntary or involuntary action, but rather investment in and upgrading equipment.

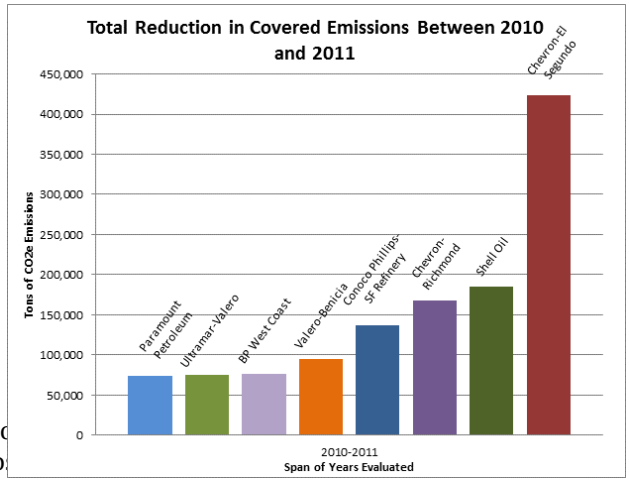

Figure 1: 2010-2011 CA Refinery Emission Reductions

[26] Sijm, Jos, Karsten Neuhoff, and Yihsu Chen, 2006. "CO2 co… sector," Climate Policy, and Ellerman, Denny, and Paul L. Jo… Trading System in perspective," Pew Center on Global Climate … Climate and Energy Solutions).

[27] Joint Letter of Economists and Economic Experts to Governor Brown Relating to the Allowance Allocation Design of the California Cap-and-Trade Regulation, August 26, 2012.

[28] Koehler, Larissa, "Major California Refineries Logging Big Pollution Reductions Under AB 32" http://blogs.edf.org/californiadream/category/global-warming-solutions-act-ab-32/page/2/, February 12, 2013.

In support of EDF's analysis, a recently released CARB report shows the major energy efficiency investments are being pursued across the state's largest refineries.[29] In the report, CARB identified 401 energy efficiency opportunities that are completed, ongoing, scheduled or currently under consideration at the state's biggest polluters. In total, these projects would reduce GHG emissions from the 12 facilities studied by about 2.78MMT CO2e annually, about 9% of their statewide total. In addition, these improvements would create individual net savings of up to $25 million annually. What's more, these savings estimates do not include the benefit these companies get from having to secure fewer allowances – worth another $ 50 million annually at a forecasted carbon price of $18/ton of carbon.

A prime example of the type of investment being made can be seen at Valero's refinery in Benicia, CA, which decreased covered GHG emissions by over 95,000 metric tons. As reported in the Benicia Herald, this decrease was the direct result of a new flue gas scrubber put into use at the refinery in 2011.[30] According to Sue Fisher Jones, public affairs manager for the Benicia refinery, the Valero installation,

> *"…will let the refinery retire existing furnaces, allowing new, energy-efficient furnaces to operate and reduce the refinery's greenhouse gas footprint.*"[31]

Another prime example of the lack of need for transition assistance to refineries can be seen in corporate documents released by Tesoro related to the purchase of the nearby BP Wilmington refinery for $1,175 million. In support of the sale, Tesoro released the following statements, prior to any transition assistance modifications.

> *"Tesoro has a proven track record on the West Coast, and we understand the business climate and the challenging, but manageable, regulatory environment in California… Tesoro has invested over $1.7 billion in our West Coast facilities over the last five years… The transaction is expected to reduce stationary source air emissions, lowering AB 32 compliance costs…Reconfiguration of the refineries will increase transportation fuels production while decreasing Wilmington's CO2 emissions by 30%..."*[32]

In sum, CARB's justification for extending transition assistance is to allow for additional certainty and time for industry to invest in the low carbon production processes and further protect them from leakage and to ensure consumers are not negatively impacted by the Program. From this latest emissions report, and the points detailed above, because of the dominant position

---

[29] CARB, Energy Efficiency and Co-Benefits Assessment of Large Industrial Soures, Refinery Sector Public Report, June 2013. Available at http://www.arb.ca.gov/cc/energyaudits/eeareports/refinery.pdf

[30] Weilenman, Donna Beth. "Refinery to Test New Scrubber." The Benicia Herald. N.p., 4 Dec. 2010. Web. 01 Aug. 2013.

[31] ibid

[32] See Tesoro Investor Summary: Tesoro Purchase BP's Southern California Refining And Marketing Business, Also See: Thomson Reuters Street events Edited Transcript TSO -Tesoro Corporation to Purchase BP's Fully Integrated Southern California Refining and Marketing Business -Conference Call EVENT DATE/TIME: AUGUST 13, 2012.

of oil refineries in California and their ability to pass through costs, it does not appear that the petroleum refinery sector needs more assistance via free allowances.
EDF Staff Leads: Tim O'Connor, toconnor@edf.org or Emily Reyna, ereyna@edf.org.

Conclusion

We appreciate the fact that CARB continues to strengthen the program in both big and small ways. Continued monitoring and improvement of the program is important in ensuring California achieves our desired economic and environmental goals.

We look forward to continuing to work with the board and the staff to create the most robust market possible. Thank you for your consideration of these comments on the proposed changes to the cap-and-trade regulation.

If you have any questions or concerns regarding the comments made in this letter, please contact Erica Morehouse at emorehouse@edf.org or 916-492-4680.

APPENDICES A & B

APPENDIX A: Oil Refinery Giveaway – Allowance Value Calculations Under Proposed Amendments.

A	B	C	D	E	F	G
	2011	2015	2015	2015	2015	2015
Facility Name	Emissions reported through MRR	Allowance giveaway under original TA schedule (75%)	Allowance giveaway under proposed TA schedule (100%)	Additional allowances from original TA schedule now proposed as giveaway	Price per allowance (middle scenario)	Cost of giveaway now proposed from original TA schedule
BP West Coast Products LLC, Refinery	4,357,243	2,776,435	3,701,914	925,478	$14.70	$13,608,772

Total cost of giveaway now proposed from original over all refineries (2015-2020) = $648,074,558

*TA = Transition Assistance

The above table demonstrates the methodology for calculating the petroleum refinery giveaway under the proposed transition assistance schedule. It shows calculations for the BP West Coast Products refinery as an example.

Explanation of items and calculations

- **Column A**: The refinery facility name.
- **Column B**: This is the most recent data reported by facility under ARB's Mandatory Greenhouse Gas Reporting program.[1]
- **Column C**: Allowance giveaway under the original schedule is calculated for year *t* according to the following equation (in this case, *t*=2015):

$$A_t = GHG_{2011} \times C_t \times 0.90 \times AF_t$$

where

GHG_{2011} = official reported emissions of refinery in 2011

C_t = cap decline factor for year *t*

AF_t = Industry assistance factor for year *t*

Year t	2013	2014	2015	2016	2017	2018	2019	2020
C_t	0.981	0.963	0.944	0.925	0.907	0.888	0.869	0.851
AF_t	1	1	0.75	0.75	0.75	0.50	0.50	0.50

Note: cap decline factors are those documented in the current regulation

- **Column D**: Allowance giveaway under the proposed schedule is calculated for year *t* according to the above calculation with the following industry assistance factors (in this case, *t*=2015):

Year t	2013	2014	2015	2016	2017	2018	2019	2020
AF_t	1	1	1	1	1	0.75	0.75	0.75

APPENDIX A: Oil Refinery Giveaway – Allowance Value Calculations Under Proposed Amendments.

- **Column E**: Subtracts value in column C from column D to arrive at the additional allowances that the refinery must purchase under the proposed TA schedule as compared to the original TA schedule
- **Column F**: Allowance price in the middle scenario is $2.50 above the floor price in 2015. The floor price was calculated starting with $10 in 2012. For each year after, the floor price was increased by 5% plus the rate of inflation forecasted, as is consistent with the regulation.[2]
- **Column G**: Multiplies value in column E with column F to arrive at the additional cost of the original TA schedule over the cost of the proposed TA schedule for BP West Coast Products in 2015, when the proposed change would take effect.
- **Total cost of giveaway now proposed over all refineries (2015-2020):** If the above analysis is repeated for all of the regulated refineries across all years of compliance periods 2 and 3, when the proposed regulation differs from the current regulation, then the total cost is the value highlighted. Therefore, this number represents the value of the additional allowances that will be given away through 2020 if the proposed regulation is adopted as compared to the current regulation. This is a mid-range estimate based on an allowance price that is $2.50 above the floor price. The model is available upon request.

APPENDIX B: Oil Refinery – Operating Profits Analysis Per Barrel of Gasoline

A		B	C		D	E		F	G	H
2012-2013			2012-2013			2012-2013		2013	2015	
Refiner costs and profits per gallon of gasoline		Gallons per barrel	Refiner costs and profits per barrel of gasoline		Refiner costs per barrel of gasoline	Refiner profits per barrel of gasoline		Throughput per year (90% capacity) (barrels)	Cost from original TA schedule now proposed as giveaway (middle scenario): Total	Cost from original TA schedule now proposed as giveaway (middle scenario): per barrel
Branded	Unbranded		Branded	Unbranded		Branded	Unbranded			
$ 0.46	$ 0.41	42	$ 19.47	$ 17.08	$8	$ 11.47	$ 9.08	659,355,674	$ 97,911,430	$ 0.15

Profit per barrel	$ 11.23	
Cost from original TA schedule per barrel	$ 0.15	1.3%

*TA = Transition Assistance

Explanation of items and calculations

- **Column A**: The values listed are the averages from the costs and profits data listed from January 2012 – August 2013 on the California's Energy Almanac website. [1]
- **Column B**: Conversion constant
- **Column C**: Values listed equal the product of columns A and B which calculate refiner costs and profits on a per barrel of gasoline basis. Branded = $0.46 per gallon of gasoline x 42 gallons/barrel = $19.47 per barrel of gasoline
- **Column D**: This is a conservative estimate. Note that the highlighted percentage is only mildly sensitive to this parameter within a wide range of values for the assumption of cost per barrel.
- **Column E**: Subtracts value in column D from column C to arrive at refiner profit per barrel of gasoline. Branded = $19.47 - $8 = $11.47
- **Column F**: Throughput is estimated at 90% of California refinery capacities as of October 1, 2012. Capacity data is also from California's Energy Almanac website.
- **Column G**: Total costs from the original TA schedule now proposed as the giveaway. This middle scenario assumes the allowance price is $2.50 above the floor price in 2015. This is the cost differential from current regulation to updated regulation with 25%
- **Column H**: Column G (value of giveaway) divided by Column F (number of barrels per year) to give a cost per barrel

[1] http://energyalmanac.ca.gov/gasoline/margins/

APPENDIX B: Oil Refinery – Operating Profits Analysis Per Barrel of Gasoline

- **Note about years:** Refiners costs and profits as well as throughput are based on latest available public data. The costs associated with the TA schedule changes are from 2015, since that's when the change would occur.
- **Profit per barrel:** Uses column E and percentage of capacities from branded refineries vs. unbranded refiners to calculate an approximate weighted average of profit per barrel based on capacity in 2011.
- **Cost from original TA schedule per barrel – highlighted percentage:** Divides profits per barrel by cost from original TA schedule per barrel and represents the cost as a percentage of the profits.
- **Note:** these calculations are based on gasoline data, whereas similar analysis can be performed for the other refinery products from crude. Gasoline represents approximately 50% of the product from crude, whereas the remaining products are aviation, distillate and residual fuel.[2] Also, we acknowledge that these calculations are with respect to the short-term variable costs. However, even if we were to account for fixed costs, we assume that those would be paid back to the refineries eventually in annual energy savings.

Narrative explanation of model

Using publicly available data from California's Energy Almanac, we calculated that California refinery costs and profits per barrel of gasoline to be approximately $18 on average during 2012 and 2013 to date. For the purpose of attempting to isolate the portion of this $18 which is profit, one may use a high end estimate of refinery costs of $8 per barrel, thus giving an approximate profit of $10 per barrel profit on average across refineries. In contrast, the total value of the allowances which the original transition assistance schedule called for refineries to pay for, but the proposed schedule aims to give away for free, amounts to just a fraction of this profit, likely less than $0.20 per barrel. These estimates are based on the model described in Appendix A, which estimates the total give away value through 2020 to be between $550 and $750 depending on future price per allowance. Thus to put these costs from the original transition assistance schedule in perspective, per barrel of gasoline, they are likely between 1% and 2% of profits for these refineries.

[2] http://energyalmanac.ca.gov/petroleum/refineries.html