



BP America, Inc

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DATE: August 14, 2008

Via Email

Chuck Shulock
California Air Resources Board

Subject: BP America Comments on CARB's
Climate Change Draft Scoping Plan

Dear Chuck:

BP America, Inc. (BP) appreciates the opportunity to respond to the California Air Resources Board's request for public input on the Draft Scoping Plan (the Plan), pursuant to the California Global Warming Solutions Act of 2006. We also appreciate the considerable time you and your staff have devoted to this challenging issue, and your staff's willingness to accept our frequent requests to meet to discuss our views. We acknowledge the very open process that has accompanied the assembling of the Plan and are aware of the considerable resources that are required to enable this public process.

BP recognizes the leadership demonstrated by California in addressing climate change, and the tremendous work by CARB staff to balance the complexities of the issue, the views of a large and diverse group of stakeholders, and the statutory requirements of AB32. We understand that this is not an easy task and that in many ways, CARB is blazing a path in designing a GHG emission reduction program that includes virtually 100% of the state's emissions.

BP supports a precautionary approach toward climate change, even though we recognize that our understanding of climate science is incomplete. BP believes the U.S. should adopt a mandatory cap and trade program at the federal level to mitigate the growth of greenhouse gas (GHG) emissions. While we would strongly prefer and will continue to advocate for a federal approach, we recognize the value of the dialogue taking place, the ideas developed, and the momentum created by state and regional initiatives.

BP believes that the most promising aspect of the Plan is its recognition of the benefits of a market-based program, and the intention to cover 85% of the state's emissions under a cap and trade program. However, we have significant concerns about certain proposed

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design elements of the cap and trade system as detailed in the enclosed attachment. Our primary concerns and recommendations to CARB on revisions to the Plan are summarized below.

Summary of Key Concerns:

- While the Plan recognizes the benefits of a cap trade system, it appears in practice to rely too heavily on the use of direct regulatory measures – even by 2020.
- Use of command and control regulation impacting sources within a cap and trade program will not result in any additional emission reductions, but rather will only shift where or how the reductions occur while raising the cost of the program.
- The Plan's proposal to severely limit the use of offsets will significantly increase program costs and uniquely disadvantage California consumers and businesses.
- Rather than focusing on achieving the most cost-effective GHG reductions, the Plan appears tilted toward achieving co-benefits. Inappropriate focus on co-benefits will likely result in a system that is more costly and less effective for GHG reduction.
- Carbon capture and storage as a key enabling technology receives only passing mention in the Plan.

Summary of Recommendations for Revisions to the Draft Scoping Plan:

- Allow the market to work in a way that delivers cost effective emission reductions by making fullest use of trading as a means of meeting emission reduction obligations.
- Justify the use of direct regulation by identifying the market failure that the direct regulation seeks to address.
- Calculate the cost effectiveness, strictly in terms of \$/MMT GHG, for each measure in a manner that is transparent to stakeholders.
- Abandon any further efforts to design direct regulations for entities already subject to a cap as this direct regulation will result in no additional GHG reductions or contributions toward meeting the state's emission reduction goals.
- Design a program that allows for the broad use of offsets.
- Address Environmental Justice concerns and maximize co-benefits in a way that does not encumber the cost effective design of a market-based system.
- Consider implementing the concept of Climate Change Enterprise Zones to address Environmental Justice and co-benefits.
- Make judicious use of auctions over time, considering learnings about the process and effect of auctions, competitiveness issues, the best use of auction revenue, and future integration into a federal or regional system.
- Fully address a development and deployment strategy for carbon capture and storage. Utilization of CCS should be a signature issue for California.
- Facilitate state policy for an energy efficiency portfolio standard for low carbon power as a compliment to the RPS.

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- Detail a plan to capture the considerable GHG reduction benefits of combined heat and power (CHP) by designing a strategy to encourage additional CHP development and removal of barriers to this efficient technology.

I look forward to working with you and your staff to discuss our comments in more detail, and to constructively assist in designing and implementing the Plan in a way that meets legislative intent, benefits Californians, and advances the solution to climate change. Please feel free to contact me should you wish to discuss these recommendations in more detail.

Sincerely,

Ralph J. Moran
Director, West Coast Climate Change Issues
BP America, Inc.

cc Mary Nichols
James Goldstene
Anthony Eggert
Linda Adams
Eileen Tutt
Darren Bouton



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**Comments to the California Air Resources Board on the Climate Change Draft
Scoping Plan, June 2008 Draft**

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The Need for a Broad, Market-Based Approach to GHG Reductions

BP America, Inc (BP) believes a market-based approach to addressing climate change is not only the most efficient and cost effective – but also the only approach that incorporates the need to find a globally scaleable solution recognizing the global nature of the issue of climate change. A market-based approach, such as a cap and trade system, is also the only policy alternative that provides the assurance of meeting a specific emissions reduction target - and does so while delivering this outcome at the lowest cost – ultimately allowing more emission reductions to be achieved. A market-based approach to addressing climate change recognizes that the most efficient emission reduction strategies will change over time as markets and technologies evolve and develop. A market-based approach, such as a cap and trade system, can react quickly to evolving technologies and new approaches in a way that a command and control regulatory approach simply cannot.

A primary objective of a market-based, GHG-reduction program should be to establish a broad, consistent price for carbon across the widest segment of the economy as is practicable. A broad, consistent carbon price will result in the fairest, most effective and most efficient reduction of GHGs and will best distribute the economic burden and increasing opportunities for low-cost abatement measures. A broader market, including one that integrates into an eventual regional or federal system, will reduce the impact of leakage and will increase the incentive and marketplace for innovation. That is why the aspiration of such a system should be an economy-wide, market-based program, while recognizing that it may take some time to achieve a fully economy-wide approach.

BP is not alone in the view that a GHG emission reduction program designed with cap and trade system as its cornerstone will provide the most certainty around desired environmental outcomes and at the lowest cost. The Market Advisory Committee (MAC) of the California Air Resources Board – a blue ribbon committee of experts assembled to advise California policy makers on the design of a market-based GHG-reduction program – concluded the following on the use of a cap and trade system to reduce GHG emissions:

... one of the main attractions of a cap-and-trade system is its potential to achieve stated emissions targets and to do so at lower cost than would be possible if facilities faced individual emissions limits. In a cap-and-trade system, facilities that face relatively high costs to reduce emissions will tend to purchase additional emissions allowances rather than incur those costs. Correspondingly, facilities that can reduce emissions at relatively low cost will find it advantageous to purchase fewer allowances or sell any excess allowances; even though this obliges them to reduce emissions further, the avoided cost or sale revenues more

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than compensate for the costs associated with implementing extra reductions. Thus, allowance trading causes emissions reductions to be undertaken by those facilities that can accomplish reductions at the lowest cost.

This potential for cost savings is not simply a theoretical proposition. Studies indicate substantial cost savings from existing cap-and-trade programs. The two major studies of cost savings for the SO₂ program (Carlson et al., 2000 and Ellerman, 2003b) are in general agreement that savings under the trading program amounted to 43–55 percent of expected compliance costs under an alternative regulatory program that imposed a uniform emission standard. Carlson et al. cite savings of over 65 percent compared to a policy that might have forced post-combustion controls (scrubbers) to achieve the same level of emissions.¹

Environmental organizations also recognize the important benefits of a cap and trade system. The Natural Resources Defense Council and the Union of Concerned Scientists recently observed that:

In any regulatory system, the regulated entities have more information than their regulators. A cap and trade program can help address this asymmetry by enabling the regulator to focus on desired outcomes (a limit on emissions) without needing to know everything about how to achieve that outcome, and can thereby reduce the administrative burden on the regulator.²

All of the aforementioned benefits of a market-based approach explains why jurisdictions that are tackling or are beginning to tackle the issue of climate change worldwide, have done so using a cap and trade program as the cornerstone of their GHG reduction program. This is true in the European Union, in the Northeast states, in the Western Climate Initiative, and in most legislative proposals at the federal level.

Although BP understands California's decision to move forward on the issue of climate and create a state-wide GHG reduction program, climate change is a global problem that will ultimately require coordinated national and international action. We support California's effort to work with other states and Canadian provinces in the Western Climate Initiative (WCI) to develop a regional greenhouse gas trading program and that the Plan has set an explicit goal of linking the California program with other WCI partner programs to create a regional market. California should work to include design elements that would enable rapid harmonization with future federal requirements.

¹ Recommendations for Designing a Greenhouse Gas Cap and Trade System for California, Recommendations of the Market Advisory Committee to the California Air Resources Board, June 30, 2007

² Comments of the Natural Resources Defense Council and Union of Concerned Scientists on type and point of regulation issues; PUC Rulemaking 06-04-009, December 3, 2007

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Direct Regulatory Measures Have a Valid But Limited Role

It is important to acknowledge that California's program to address climate change will and should use several parallel policies to reduce emissions. This means a market-based system, such as cap and trade, with traditional regulation, and likely other policies as well. BP understands and acknowledges the role of direct regulatory measures where there are demonstrable, persistent market failures. We acknowledge that the final Scoping Plan will require a mix of approaches including cap and trade, direct regulations, incentives, and other approaches.

So while some amount of direct regulation, or command and control regulation, can be justified on a limited basis, the plan should acknowledge the transitional nature and shortcomings of an approach that relies heavily on command and control. A command and control system is not scalable – either regionally, nationally or internationally. Because climate change is a global problem that requires a global solution, we need a program that has the potential to be scaled into a large program that will create a common carbon currency. It is simply not possible to design command and control systems that meet these objectives. Senate Energy and Natural Resources Chairman, Jeff Bingaman, a champion for serious climate change policy in the US Senate, said recently,

... if you think of the size and complexity of the energy system we are trying to change, direct regulation on a plant-by-plant basis is very impractical. It will also likely be more expensive to consumers, because it is economically inefficient to squeeze reductions from some sources when those same reductions can be found elsewhere far cheaper.³

The Draft Scoping Plan's Use of Markets and Direct Regulatory Measures

The Plan is promising in that it acknowledges the benefits of a market-based system, such as a cap and trade program, and plans to include some 85% of state emissions within this cap and trade program by 2020. This is a positive development for California, but we are concerned and somewhat confused by what appears to be a heavy reliance on command and control regulations under the auspices of what is described as a market-based cap and trade system.

The Plan describes a cap and trade program as one that "caps the total amount of GHG emissions and allows covered sources to find the least expensive way to comply." The Plan then goes on to describe the largest element of the proposed program as one in which 85% of the state's emissions are under a cap and trade program. However, it is difficult to reconcile CARB's description of how a generic cap and trade works – and how the Plan's proposed cap and trade program works. It appears the program described in the Plan *prescribes* emission reduction activities for 80% of the reductions – and allows a true market to achieve only approximately 20% of the reductions by 2020. If this is in fact the case, it would be a disappointing outcome – especially considering that this limited market will exist in 2020, according to Table 2 of the Plan. Trading, the ability to seek out the

³ Speech to NDN, Finding the Path Forward on Climate Legislation, July 9, 2008

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lowest cost solution, is really the key element of a cap and trade system that results in cost effectiveness. By 2020, California's GHG program should be far along the way toward relying on markets as the primary mechanism for emission reductions. Limiting the trading market in California, however, will have serious consequences for California consumers and businesses.

Command and Control Reduces the Incentive for Technological Innovation

A market-based approach to GHG reduction increases the incentive for companies to go beyond compliance and to be able to quickly adapt to and take advantage of emerging technologies. A command and control system inherently relies on government's view of existing technology as envisioned by regulators today. A system of command and control regulations will require large front-loaded investments by industry in that existing technology. This reduces the market and incentive for entrepreneurial innovation of more and cheaper ways to reduce emissions, and also reduces the amount of capital which is available to adapt to new technology. Conversely, an approach that allows companies to continuously seek out the most efficient and lowest cost solutions drives continuous innovation.

Over-Reliance on Command and Control Will Harm California Industry and Consumers

As previously stated in this document, a cap and trade system provides the lowest cost approach to meeting environmental goals with certainty. An approach that relies too heavily on direct regulation does not take advantage of the trading element of the program – which allows regulated industries to seek out the lowest cost solutions - and for the market, rather than government, to decide where capital and innovation will be applied. The result will be that California will spend more of its precious resources to achieve the same environmental outcome. In order to continue to operate in the state, industry will have to pay more to comply, and consumers will pay more for goods, services and energy. And as California industries will be competing against companies that are operating under a true market system (i.e. WCI and/or future federal program), California businesses will be put at a competitive disadvantage. This is because regulated entities in other states will be able to choose low-cost solutions and nimbly apply emerging technology while California industry will be tethered to a prescriptive approach.

Minimize, Justify and Limit Further reliance on Command and Control Regulation

While the current Plan relies too heavily on prescriptive regulation and not enough on markets by 2020, we are further concerned that CARB appears to be looking to further whittle away at the true market element of the Plan by considering even more command and control regulations to supplant an already limited market-based trading program. One example is the Plan's proposal to consider layering command and control regulations on top of sectors which will already have a reduction obligation under the cap and trade system. More specifically, we are referring to the potential measures described as "Energy Efficiency and Co-Benefits Audits for Large Industrial Sources" (Table 2, p. 11, C-102), "Refinery Energy Efficiency Process Improvements" (including "Replacing the low efficiency boilers and heaters with new equipment", "Installing fluid catalyst cracker (FCC) power recovery turbines", "Optimizing carbon-on-regenerated-catalyst (CRC) ratio with a carbon monoxide boiler or incinerator", "Replacing hydrogen plants with modern,

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more efficient plants”) (Table 22, p.40, C-109), “Removal of Methane Exemption from Existing Refinery Regulations (Table 22, p.40, C-110), GHG Leak Reduction from Oil and Gas Transmission (Table 22, p.40, C-113), Industrial Boiler Efficiency (Table 22, p.40, C-115), and Stationary Internal Combustion Engine Electrification (Table 22, p.40, C-116).

Command and control regulatory measures on these sources will result in **no additional GHG emission reductions** and no additional contribution to meeting state goals, because the required reductions will already be occurring through the emission obligations presented by placing these sectors under a cap and trade system. CARB’s potential development of these regulations will only shift reductions from measures where regulated parties are able to seek out the lowest cost reductions – to measures prescribed by CARB that are likely to only increase the cost of the program. When we are dealing with sources of emissions that are well defined and able to be monitored, the only valid reason to consider command and control regulations as a means to achieving emission reductions would be the existence of demonstrated, persistent, market failures. The existence of market failures for large, industrial emitters subjected to a carbon price, and for which the cost of energy is a large economic driver, has not been demonstrated. To the contrary, these industries demonstrate a high sensitivity to price signals.

If implementing these regulatory measures for these sources will result in no additional GHG emissions and only tend to increase the overall cost of the program, we question where CARB sees the value in expending the resources to undertake this work. We strongly urge that CARB abandon duplicative efforts to regulate these sources and instead focus the agency’s limited time and resources on emission reductions outside the cap and trade program or where demonstrated, persistent market failures exist.

Each refinery has its own unique process configuration. There is no "one size fits all" direct measure for refineries. Refiners must look at the energy balance of each facility and decide which modifications make sense financially and environmentally. Using the FCC CO boiler as an example, this particular measure may not even increase the energy efficiency of a refinery. In fact, it may decrease the overall efficiency depending on how a refinery is configured and can result in an increase of criteria pollutant emissions as well. There are additional regulatory (e.g. federal MACT standard) measures that arise for installation of new refinery equipment. As pollution abatement controls consume substantial energy, those regulatory requirements may result in increases in GHG emissions as well.

CARB can not be expected (and should not try) to be expert in all industrial processes, identifying cost-effective GHG reduction opportunities, and in understanding the unique relationships that exist between energy efficiency improvements and GHG reductions for the wide variety of businesses and industrial processes that emit GHGs in California. This micro-management approach of direct regulation will not provide the desired results (i.e. cost effective GHG reduction) because the power to make decisions will be removed from those best able to make decisions. CARB should instead focus on setting the regulatory framework (i.e. identify reduction targets) and allow the experts to evaluate, improvise, and make decisions on how best to deliver the mandated reductions.

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The Use of Offsets

Aside from the decision to implement a broad, well-designed market-based approach to address climate change in California, CARB's approach to the use of offsets is one of the most important decisions to be made in implementing a program that both meets the environmental goal and is cost effective.

The ability of regulated entities to use offsets to meet a portion of their compliance obligation is an essential part of a well-designed cap and trade system. Moreover, an essential part of the design of an offset program should be a rigorous approach to ensure that the emission reductions allowed in the offset program are real, additional, permanent and verifiable.

The use of offsets that are real, additional, permanent and verifiable is a win-win-win for California consumers, for environmental integrity, and for the potential to position California to meet its challenging, longer term, emission reduction goals. Offsets are a win for consumers because they can provide lower cost emission reductions, thereby reducing impact on consumer prices. Offsets are a win for environmental integrity because while offsets can be viewed as a cost containment mechanisms, they do so while maintaining the environmental integrity of the emissions reductions target. Every offset, so long as it meets rigorous standards, results in a quantifiable, equivalent reduction of GHG emissions. In this way, the use of offsets is vastly preferable to other cost control mechanisms (for example, a safety valve) where the environmental integrity of the system is more difficult to uphold. Lastly, as the public's acceptance of the cost of the program will likely be the factor that determines California's ability to meet the goals of AB32 (as well as longer term goals), the ability of offsets to reduce program costs will contribute to the potential of meeting longer term emission reduction goals.

The use of offsets that are real, additional, permanent and verifiable create societal benefits in a cap and trade program by maintaining the environmental integrity of the emission reduction target while reducing the social costs of the program. In addition, the use of offsets:

- expands types of emission reductions to areas which may not be envisioned by regulators
- bring economic co-benefits to communities
- bring particular value in the short term by providing the ability to deliver short-term reductions while allowing technological advancements in capped sectors to help deliver more material, longer-term reductions
- create a class of carbon-reduction entrepreneurs who would otherwise not be engaged in helping to address climate change

BP's recommendations on the use of offsets are consistent with those offered by the Market Advisory Committee (MAC) of the California Air Resources Board – a blue ribbon committee of experts assembled to advise California policy makers on the design of a market-based GHG-reduction program. The MAC concluded that "*offsets should be*

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allowed as part of the overall cap-and-trade program” and that such a program “should reject geographic or quantitative limitations on offset credits so as to maximize the opportunity to reduce GHG emissions at the lowest cost”⁴.

The Benefits of the Broad Use of Offsets are Substantial and Real

In an analysis of the Lieberman-Warner Climate Security Act of 2008, the U.S. EPA concluded that the unlimited use of offsets results in a reduction in the cost of emission allowances of 71%. Conversely, USEPA concluded that if offsets are not allowed, the cost of emission allowances would increase some 93%⁵. Charles River Associates (CRA) performed a peer-reviewed analysis of the role of offsets in implementing AB32. CRA concluded that the broad use of offsets in California could reduce program costs by 80%, minimize economic loss to the state by up to \$40 billion/year by 2035, and prevent the loss of over 300,000 jobs resulting from leakage⁶.

These studies show that there are significant and actual economic consequences to limiting offsets. Limiting offsets does not increase emission reductions. In fact, a strong argument can be made that limitations on offsets will reduce our ability to reach longer term emission reduction goals. Reaching the challenging post-2020 goals will simply not allow us to take off the table any valid, verifiable emission reduction opportunities.

Limiting Offsets Uniquely Disadvantages California

Industries, consumers and policymakers in California should be particularly concerned about the competitive issues surrounding limits placed on the use of offsets. Jurisdictions such as California, with a very efficient energy production portfolio and the high proportion of emissions from the transportation sector, will benefit most from a broad offset policy. California’s efficient production of energy means there will be fewer short-term opportunities to achieve cost effective emission reductions from these sources than will be available from less efficient production in other states. In the transportation sector, it is a widely held view that material emission reductions in this sector are more challenging and expensive to come by in the short term. Moreover, as has been pointed out by many analyses, the cost of doing business in California is significantly higher than in other states, so California will benefit from the use of offsets produced outside of the state. California’s Economic and Technology Advancement Advisory Committee (ETAAC) concluded that the cost of doing business in California is 23 percent more expensive than the national average and that these extra costs come on top of the 32 percent higher cost burden U.S. manufacturers face when competing internationally⁷. For these reasons,

⁴ Recommendations for Designing a Greenhouse Gas Cap and Trade System for California, Recommendations of the Market Advisory Committee to the California Air Resources Board, June 30, 2007.

⁵ EPA Analysis of the Lieberman-Warner Climate Security Act of 2008
S. 2191 in 110th Congress
March 14, 2008

⁶ The Role of Offsets in Enhancing the Cost-Effectiveness of AB32, April, 2008

⁷ Economic and Technology Advancement Advisory Committee, Technologies and Policies to Consider for Reducing Greenhouse Gas Emissions in California, A Report to the California Air Resources Board, February 2008

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California will benefit from a higher short- to mid-term reliance on the use of offsets while the market works to further transform our energy systems.

Considerations for Limiting Offsets

Many concerns over the use of offsets are based upon a presumption that offsets will not be real, additional, permanent and verifiable. We believe this is valid but eminently solvable concern with ongoing or planned efforts within California, the Western Climate Initiative, and internationally to address and resolve this issue.

An additional concern has been raised by some that offsets should not be used, or should be limited quantitatively, because they reduce the incentive for innovation within the capped sectors. However, to the extent that any incentive for innovation within the capped sector might be reduced in the short-term by the use of offsets – this incentive does not simply disappear. Rather, this incentive for innovation is distributed over a much wider group of actors – a group of actors whose ideas and participation we will need in order to solve climate change. We believe that in fact this is a very wise use of “innovation capital” in that it results in the widest signal to industry and entrepreneurs about the value of actions and technologies that result in reduced carbon emissions. Given our very challenging long term emission reduction goals - there will be no shortage of incentive for innovation in capped sectors, but rather a shortage of valid, verifiable, low cost emission reduction opportunities.

Quantitative limits on offsets have also been proposed as a means of focusing the emission reductions attributed to the market (i.e. 35.2 MMT from Table 2 – the only segment of the Plan apparently able to use offsets) on capped entities themselves. An examination of Table 2 shows that some 80% of emission reductions from the Plan are already prescribed by CARB, through direct regulation, on emitting entities in California. We have previously discussed the negative consequences of the Plan’s heavy reliance and a prescriptive command and control approach. However, in proposing limits in the use of offsets within the small segment of the Plan that is able to use offsets, further directing within this portion of the plan how and where emission reductions will take place, CARB further proposes to whittle away at the very limited portion of the Plan that actually allows a market to seek out the lowest cost solution. If CARB is already directing where and how emission reductions occur for some 80% of necessary reductions (according to Table 2), is it really necessary for CARB to concern itself with further directing where the emission reductions occur in the market? At some point, with complete direction by CARB as to how and where emission reductions will take place, any semblance of the benefits of a market-based approach is lost.

Moreover, as CARB envisions the market as a backstop to the performance of direct regulations, in addition to being an emission reduction measure in its own right, we believe the market will actually play a much larger role in achieving the 2020 goals than is contemplated in Table 2. Given the major uncertainties in the ability of direct regulatory measures to deliver specific emission reductions, emission reductions delivered by the market will likely be much larger than the 35.2 MMT assigned in Table 2. Therefore, we

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urge CARB not to limit the use of offsets based on a narrow view of the size of the tradable market.

Some argue, using a troubling mental shortcut in attempting to justify quantitative limits on the use of offsets, that because offsets lower program costs, they reduce the incentive for innovation, therefore the use of offsets is undesirable. The use of this heuristic is troubling because following this logic, any program element that raises the cost of the program is desirable, and conversely, anything that lowers the cost of the program is undesirable. We believe it is possible to have a cost effective, market-based program that also effectively incentivizes innovation with targeted approaches to supplement a cap and trade system.

Many, including BP, acknowledge 2020 GHG reduction targets as simply a point in time on the way to a 2050 goal. Reaching these longer term emission reduction targets will result in no shortage of incentive to innovate, but more likely a shortage of low-cost emission reduction opportunities.

It has also been argued that geographic limitations on offsets keep the co-benefits from offset projects "closer to home". While this may be true, it should be acknowledged that there is an explicit and significant cost to keeping these benefits closer to home by limiting choice in where offsets occur. The previously referenced work of the ETAAC provides a good estimate of the cost penalty to California consumers and industry from geographically limiting offsets to those produced in California (55% increase in cost of offsets), or limiting to U.S. offsets (32% increase in costs).

The belief that putting geographic limitations on offsets leads to increased benefit to a limiting jurisdiction, does not consider the full cost and effect of these limits. In practice, limiting offsets to specific geographic locations will raise the program costs to all the constituents within that jurisdiction in order for a few constituents to benefit. The result is no net benefit to a jurisdiction.

Offset projects will occur in desired locations to the extent that the projects are more cost effective to produce in these locations – or if these locations are otherwise a more hospitable environment for these emission reductions to occur. Those who desire to establish geographic limitations should instead focus their attention on making their desired locations more hospitable to offset projects through reductions in hurdles that increase cost and risks to these projects. This strategy will allow these jurisdictions to capture both the cost reduction benefits of a broad offset policy as well as any co-benefits that might accrue from local project development.

Proposed geographic limitations on offsets also represent a failure to recognize the global nature of the problem of climate change and the need for a global solution. Solving climate change will require, among other things, that we move beyond a mindset that requires that all of California's emission reductions occur in California, Oregon's in Oregon, Washington's in Washington, and so on. We should move toward a mindset that identifies each jurisdiction's necessary 'wedge' of reductions, and that each jurisdiction should be responsible for seeing to it that this amount of emission reductions occur in a verifiable

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manner – wherever they can be efficiently obtained. Efforts to solve climate change will suffer if instead of looking for global solutions, we allow climate change policy to begin to build walls around our jurisdictions.

California, through the actions of our Governor, Cal EPA and CARB, have placed considerable focus on encouraging action on climate change at both the federal and international level. This focus is well placed, because without concerted action by others, California's efforts on climate change will be for naught. We need more than just California on a trajectory to reach long term reduction goals. We need the nation and the world on a similar trajectory. To be consistent with the desire to see others take serious action, California has to be willing to recognize the action of others.

Moreover, Californians enjoy an array of goods that are produced in many places in the world outside of California. As California consumers indirectly bear some responsibility for the GHG emissions that occur where they are produced, it is not unreasonable that we would encourage and recognize, in part through the purchase of offsets, the state's role in helping to reduce these emissions.

For these reasons, we urge CARB to incorporate the broad use of real, additional, permanent and verifiable offsets. From an environmental or economics standpoint, there is no valid reason to limit the use of offsets either geographically or quantitatively. CARB should estimate, document and acknowledge the undeniable tradeoff that any imposed limit on the use of offsets, either quantitative or geographic – raises the cost of the emission reduction program. This increased cost will affect the ability to reach the increasingly challenging longer term emission reduction targets at a cost that is acceptable to society.

Co-Benefits and the Determination of Cost Effectiveness

Many of the activities undertaken to comply with AB32 will likely result in co-benefits of various kinds. These co-benefits will come in the form of reduced air emissions of traditional pollutants, new jobs, savings from energy efficiency as well as other types of co-benefits. It is important that, as a state, we acknowledge, measure and document these co-benefits – and where possible and consistent with the most cost effective solution – seek to maximize these benefits. However, we can not, nor should we, let the achievement of these co-benefits drive GHG policy design.

Addressing climate change will be one of the most complex and difficult challenges that our state, and ultimately our nation, will face. The problem is solvable, but will not be easy to solve. It will require not only great advances in technological innovation, but also strict focus on effective policy, and resolve on the part of the public to accept the cost and lifestyle adjustments that will be necessary. Addressing climate change will require a single-minded focus on this century-scale problem. Viewing climate change policy development as an opportunity to expand additional environmental or social regulation will greatly increase the potential for the program to be both expensive and unsuccessful.

For certain co-benefits, there appears to be a mission creep, where CARB is going beyond the legislation's requirement that market based strategies "prevent any increase" in

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conventional pollutants. CARB now appears set upon designing a system that tries to ensure *decreases* in conventional pollutants – and at additional cost to the program - while considering a redefinition of the statutory definition of cost effectiveness in a way that essentially “nets out” what CARB perceives as the value of co-benefits.

The legislation clearly defines “cost-effective” or “cost effectiveness” as the “cost per unit of reduced emissions of greenhouse gases adjusted for its global warming potential.” The legislation did not mention a “net” cost of reduced emissions of greenhouse gases or the cost of GHG reduction adjusted for the value of the expected co-benefits. CARB should not confuse the concepts of cost effectiveness and cost-benefit analyses. Evaluation of cost effectiveness should be used to evaluate the relative costs of various approaches to achieve a given objective (i.e. GHG reduction). Cost benefit analysis will help determine whether there is sufficient societal value in undertaking an approach that is deemed to be “cost effective.” AB32 requires an analysis of cost effectiveness.

Our understanding of the “net cost” approach that CARB intends to pursue to evaluate GHG reduction measures and co-benefits is as follows:

Example 1

Measure	Cost (\$/MMT GHG)	Co-Benefits
A	20	none
B	20	substantial

Example 2

Measure	Cost (\$/MMT GHG)	Co-Benefits
C	30	none
D	50	substantial (estimated \$25 of co-benefit)

For Example 1, the analysis is clear. All other factors being equal, the clear decision is that measure B should be chosen. Both measures are equally cost-effective, but measure B has greater cost-benefit.

Analysis of Example 2 is much less clear. However, it appears that CARB may be choosing a cost effectiveness analysis that mixes the concept of cost-benefit and essentially attempts to calculate a “net GHG cost” by subtracting the estimated value of co-benefits from the cost of the measure. In theory, using Example 2, CARB’s analysis could conclude that because \$25 of the cost of measure D can be attributed to co-benefits, that the net GHG cost effectiveness of measure D is actually only \$25/MMT, therefore it is more cost effective than measure C which has a cost of \$30 MMT with no estimated co-benefits.

An analysis of this sort is not only inconsistent with the language of AB32, but also highly problematic and should be avoided – for many reasons. First, AB32 is clear that cost

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effectiveness is defined as “cost per unit of reduced emissions of greenhouse gases adjusted for its global warming potential” – in short, \$/ton CO₂ eq. The statutory language does not allow for adjustments for the cost or value of co-benefits. Second, this sort of analysis raises many questions that would first need to be answered before the value or benefit of perceived co-benefits can be established. These questions include:

- If society is paying \$20/MMT more for Measure D, how do we know this is a better deal for society? How is CARB considering the full economic and societal ramifications when examining co-benefits? What would be the full societal impacts of the increased cost pressures that California business would face? (i.e. rising prices, unemployment, etc.)
- How do we know the public would not have been better off pursuing more of Measures C or A, rather than spending much more to obtain co-benefits from Measure D?
- How do we know that the \$25/ton spent on the co-benefits are cost effectively spent and could not have been attained more cost effectively through an effort focusing solely on these co-benefits?
- How do we know that the public welfare wouldn't have been better served by pursuing Measure C, capturing the value of the lower energy costs that go along with achieving a GHG reduction goal cheaper rather than one that pays more in order to obtain co-benefits unrelated to climate change?

Other problems arise as well if CARB plans to include the value of co-benefits in the cost effectiveness determination of proposed GHG reduction measures:

- Instead of subjecting California businesses to a globally scaleable and comparable “price of carbon”, California businesses and consumers would be subjected to a price reflecting a mixture of carbon, various conventional pollutants, and the cost of achieving various other co-benefits – resulting in a higher “carbon” price and a competitiveness handicap.
- This method, which would allow CARB to justify higher cost measure to attain non-GHG related co-benefits, would essentially result in underground rulemaking since CARB would be directing regulated entities to pursue measures, at additional cost, that are designed to achieve non-GHG reductions of other pollutants. If reductions of these non-GHG pollutants are necessary, they should be pursued and justified on their own and subjected to an appropriate regulatory process that evaluates the costs, benefits and associated risks and unintended consequences of the policy.
- CARB's actions directed toward justifying higher cost measures to capture co-benefits does not appear to evaluate whether the societal benefit of the extra cost outweighs the benefits of a lower cost program focused solely on GHG reductions.

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Instead, CARB should pursue the measures that get us to our 2020 GHG reduction goal at lowest cost. There is only one way to address the statutory requirements of AB32 for cost-effectiveness and for maximizing of benefits that also provides a pathway for a viable program for 2020 and beyond. This method would consist of CARB first estimating, for each measure, the cost effectiveness in terms of \$/MMT GHG (as the statute clearly requires). Next, the program should be designed using the bundle of measures that achieve the necessary emission reductions at the lowest cost. The third step would be to estimate (in a qualitative manner) the co-benefits of each measure. It is not necessary to estimate the cost (or the \$ value) of the co-benefits for each measure. The last step would be to investigate whether there is a way to maximize the qualitative co-benefits of the program while maintaining the cost at or very near the lowest cost bundle of measures.

Climate Change Enterprise Zones

An additional strategy could be the development of *Climate Change Enterprise Zones* (CCEZ) that could be defined as especially impacted or disadvantaged communities where GHG emission reductions, along with co-benefits, will bring particular advantage. In this case, a small amount of allowance set-asides could be used to incentivize additional emission reduction projects in these areas. For instance, these allowances could be used to reward these projects with extra allowances for emission reductions (i.e. 1.2 rather than 1 emission reduction credits) for emission reductions by capped sectors or by offset project development undertaken in these areas. Entities wishing to undertake these projects and apply for the extra reduction credit could submit the plans for their projects to a board consisting of members of CARB, the local air district, community members, and/or others. The board could approve projects, based on an allowance budget, along with an evaluation of the overall benefits (including GHG reductions, co-pollutant reductions, jobs, etc) provided by the project.

A program such as the CCEZ could provide many benefits. First, it empowers local entities (air districts and communities) with the ability to evaluate and incentivize GHG reduction projects they think would most benefit their community. This type of approach is also fairer because it more evenly distributes the costs of obtaining co-benefits across the entire GHG reduction program. Other approaches that are designed to capture co-benefits unevenly across emission sources would likely result in unfair cost burdens placed on some sectors or entities in which large co-benefits are perceived to exist, and would not necessarily focus these co-benefits where they are most needed or could do the most good. This would result in some entities being subjected to higher cost measures to capture perceived co-benefits while other entities are not. The CCEZ approach also has the benefit of focusing efforts on evaluating and capturing GHG reductions and community benefits in a way that does not encumber or significantly reduce the efficiency or cost effectiveness of the entire GHG reduction program.

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Allocation of Allowances

BP supports moving toward auctioning of allowances over time with the following caveats:

- Governments are accountable for the efficient use of the potentially very large revenues produced through auctioning. Inefficient use of auction revenues will materially increase the cost of climate change mitigation to society.
- In the absence of comparable climate change measures in other jurisdictions, auctioning could significantly expose regulated businesses to competitive pressure from businesses that are not similarly regulated – increasing the potential for leakage. Leakage undermines the environmental integrity of the program by simply shifting emissions to other jurisdictions. The use of auctioning needs to take account of such effects.

While BP supports moving to auctioning of allowances over time, we accept a gradual auctioning of allowances over time in order to accommodate acknowledged design complexities and the need for practical tradeoffs. The need to better understand and account for these complexities and tradeoffs supports a judicious transition away from free allocation to emitters.

For example, the decisions regarding whether to auction allowances and what to do with the revenue raised by auction are inextricably linked. Unfortunately, it appears that much of the discussion around the use of auctions approaches these issues sequentially rather than concurrently. We believe it is not possible to justify the use of auction without regard to how the revenues are used, as it is possible that auction revenues can be used in a way that increases the costs of climate mitigation to society.

Sub-optimal use of auction revenues include:

- use of funds to directly compensate consumers to mitigate the price signals needed for a successful carbon policy
- use of funds that result in producers or consumers of low carbon energy subsidizing producers or consumers of higher carbon energy.

In general, auction revenue should only be used in ways that directly benefit the environment outcome. The most obvious example of using the funds in this manner would be to recycle 100% of the revenue to incentivize the development and deployment of GHG-reducing technologies. Another example would be to lower the societal cost of the program by using auction revenue to reduce distortionary tax rates or to provide per capita rebates unrelated to energy consumption.

We are sensitive to the cost to consumers that will arise from policies designed to reduce GHG emissions. We believe the control of these costs, in a way that does not affect the ability to reach emission reduction goals, should be an overriding objective of policy design. Cost containment, in a way that maintains the environmental integrity of the

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program, is a primary benefit of the use of a market mechanism and of design elements such as offsets.

The use of auction revenue, or the allocation process generally, to reduce price signals to consumers would, in effect, subsidize consumers' use of energy, and distort the effect of decisions that influence energy consumption. Dampening the price signal on energy consumption would result in more carbon emissions, resulting in the need for policy makers to require additional action – or regulated parties to find additional, more costly ways to meet emission reduction goals. Ultimately, therefore, the cost to consumers is not mitigated, but only delayed, and likely increased in the end. These additional regulatory requirements dictated by policy makers or additional activities undertaken by regulated entities will come at a cost to society – and to consumers.

In extreme cases, an acceptable use of some portion of auction revenue would be to mitigate severe, unintended or particularly disproportionate effects on impacted communities. In these cases such mitigation should be transparent, targeted and transitional.

As a default, the point of allocation should coincide with point of regulation and the burden of proof should be on those who would suggest decoupling these points. In many cases where we have seen the suggested decoupling of these points, the motivation has been, unfortunately, to direct the value of allowances to uses that do not benefit the environmental outcome of the GHG policy.

With regard to competitive pressures and emissions leakage that can be brought about by auctioning allowances, we believe these issues are real and potentially significant – and therefore recommend against moving toward a high degree of auction until a federal GHG reduction program has developed.

The complexity associated with understanding and accounting for these issues, combined with the lack of global experience with auctioning of this scale warrants a cautious and well-reasoned approach and transition to auctioning as an alternative to free allocation. In summary, our recommendations on auctioning of allowances in California are:

- Start with a modest degree of auctioning and transition to a higher degree of auction over time as learnings increase, as we better understand the competitiveness issues that are raised by auction and the highest and best use of auction revenue, and as it is more clearly determined when and how the state program will integrate into a federal system
- Commit auction revenues solely to uses that benefit the environmental goal and increase the potential to meet long-term reduction targets

Carbon Capture and Storage

While it is important to continue to emphasize that there are no silver bullet solutions to address climate change, and that a range of approaches and technologies will be required, it is difficult to envision a stabilization scenario in which CCS does not play a large role. The

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Intergovernmental Panel on Climate Change (IPCC) has estimated that the technical potential for CO₂ storage is likely to exceed 2000GT CO₂, with the largest capacity likely to exist in deep saline formations. Given that today's CO₂ emissions from the use of fossil fuels is around 24GT CO₂ per year, geological storage has the capacity to store 70 - 100 years of all CO₂ emissions. Others have estimated that CCS could contribute up to ¼ of the needed reductions in CO₂ emissions in order to solve climate change.

Given the leveraging role that CCS can and must play in addressing climate change, we are disappointed by the Plan's only passing mention of the technology. We believe that given California's need for, and policies emphasizing clean power, California's long standing tradition of leadership on technological innovation, and the existence of uniquely favorable geologic conditions in the state – the development and utilization of CCS can and should be a signature issue for California.

We understand that the primary reason that CARB did not include a larger role in the Plan for CCS was the belief that CCS will not play a role during the 2020 timeframe. While we strongly disagree with the view that CCS will not play a role in the stated timeframe, even if this were the case, we believe failing to address CCS in the Plan is shortsighted and inconsistent with CARB's more informed and progressive view that the measures in the Plan should position California to meet longer term emission reduction goals. Moreover, even if CARB is of the view that CCS can not play a role in the 2020 timeframe, this does not mean that we should overlook important short-term steps that should be taken *now* to ensure that CCS can deliver emission reductions over the long term.

We believe that the Plan should lay out a development and deployment strategy for CCS that addresses issues such as:

- The necessary regulatory framework
- Further technology development
- Education and outreach around CCS
- Large scale (1 million tonnes/y CO₂ or greater) demonstration projects in a variety of different reservoir types and locations
- Identification of and plans to address regulatory and other barriers
- Necessary incentives
- Liability associated with storage

We believe the time for action is now in order to ensure the success of CCS in the long-term. We believe strongly that given the right development and deployment strategy, CCS can begin to contribute to meeting emission reduction goals within the 2020 timeframe – as is being demonstrated by BP.

On July 31st of this year, Hydrogen Energy International LLC, a joint venture between BP Alternative Energy and Rio Tinto, filed an Application for Certification before the California Energy Commission for a proposed hydrogen fuel production facility and power plant in Kern County, California. The filing initiates a comprehensive regulatory review

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process and, upon approval, grants permission for the construction of the nation's first industrial-scale low-carbon power plant with carbon capture and sequestration.

The proposed facility will use Integrated Gasification Combined Cycle (IGCC) technology to manufacture hydrogen from petroleum coke (a by-product of the refining process) or blends of petroleum coke and coal, as needed. The hydrogen will be used to generate nearly 400 gross megawatts of base-load, low-carbon electricity -- enough to power 150,000 homes in the region. Over 2 million tons of carbon dioxide (CO₂) is expected to be captured and stored in deep underground geological formations annually, giving the facility minimal CO₂ emissions.

It is time to get on with the job at hand. This technology is available now and with help from policymakers, we can make it happen at scale. We know that CCS is part of the solution to the climate change problem. We have the technological know-how to do this. We need the policy and regulatory framework to enable its deployment. We urge CARB to include a robust roadmap and implementation strategy to enable California to play a leadership role in the development and deployment of CCS as a key approach to addressing climate change.

BP supports the comments on CCS submitted by Hydrogen Energy International, LLC, dated August 11, 2008. (attached).

Addressing the Transportation Sector

BP believes strongly in the need to move our society toward a lower carbon future. Contributions from the transportation sector are critical to this goal, particularly in California, where transportation is a proportionally larger part of the GHG emissions profile.

There will be a role for lower carbon transportation fuels in moving California toward a lower carbon future. CARB's intention to implement a LCFS is recognition of this role for transportation fuels, although we have previously expressed our concerns (May 9, 2008 letter to Bob Fletcher) regarding the current direction of CARB's LCFS design. We are further perplexed by the Plan's statement that "there will be no net difference in the costs of producing fuels to meet the LCFS versus the cost of producing gasoline and diesel." We would be very interested in the backup documentation to support CARB's assertion here including the timelines to which they are referring.

We believe it is possible to implement a cost effective approach to reducing carbon from fuels. However, we also believe that CARB's current presumption of cost effectiveness is highly tenuous given the many uncertainties of the LCFS, the direction that CARB is taking in LCFS design, and the only study of which we are aware (Knittel et al, 2008)⁸ that estimates, under various scenarios, cost estimates of between \$60 and \$2272 per ton of CO₂ reduced. We believe it is critical to the success of the LCFS that CARB develop, as

⁸ Greenhouse Gas Reductions under Low Carbon Fuel Standards, Holland, Hughes and Knittel, July 3, 2008

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soon as possible, a robust and transparent estimate of cost effectiveness of the LCFS (in \$/ton GHG) in order to better inform the scenarios and targets and to provide transparency to consumers and policy makers about the effect of this potential regulation.

As to the question of whether the transportation sector should be included in the scope of a cap and trade program, BP believes that a broader market will be a more efficient market. In reviewing the various options for the scope of a market, it becomes apparent fairly quickly that without the inclusion of the transportation sector, it would be difficult to cover much beyond 40-60% of economy-wide GHG emissions within a cap and trade system. This reality is no more apparent than within the state of California where GHG emissions from the transportation system make up a very large proportion of the emissions profile. As we envision a longer-term objective where virtually all of the economy is under a market-based system and subject to the same price of carbon, we believe emissions from the transportation sector should be covered within a cap and trade system. The question comes down to the timing of inclusion of these emissions, and ensuring inclusion in a way that effectively addresses those targeted emissions while not creating unintended consequences for the rest of the market.

While California is considering how and when to include the emissions from the transportation sector in a cap and trade program, these emissions should be addressed more directly through specific policies that affect the three levers of transportation emissions - vehicle design, fuel, and vehicle miles traveled. Additionally, the following considerations should be explored, better understood, and accounted for in a system design that includes transportation emissions:

- How will the complimentary policies that address vehicle design, fuel and vehicle miles traveled integrate with coverage of transportation emissions under a cap and trade system?
- Because there may not be material reductions in this sector in the short term, what effect will this have on the overall market if inclusion of this sector in a cap and trade system greatly increases the demand for emission reductions, but only slightly increases the supply of emission reductions?
- If, in order to facilitate administrative ease of coverage of this sector, the point of regulation is different than the point of emission for the transportation sector, it is important that the policy recognize that the point of regulation does not indicate liability for emissions.
- For instance, if refiners are the point of regulation for emissions that actually occur downstream and are controlled by downstream consumers, policy and policy makers must acknowledge that refiners have few options to comply with required reductions in emissions where the level of emissions are controlled by the choices of others.
- Policy and policy makers should acknowledge that the mechanism by which emission reductions would occur in the transportation sector through a cap and trade approach (to the extent they are not addressed through other, transitional, complimentary policies) will largely result from price signals sent downstream to consumers, where that price signal is established by a declining cap and a scarcity

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of allowances. There can be no restrictions placed on the ability of regulated entities to pass through costs.

- Placing the point of regulation at a point other than the point of emission must come with fair and equitable allocations of allowances for regulated entities.

A broad cap and trade system that sends a consistent price signal to as much as possible of the economy (including the transportation sector) should be the enduring carbon policy that policy makers strive to achieve. Specific regulatory approaches (such as RPS, LCFS, energy efficiency measures, etc) that are designed to address market failures or incentivize transformational technologies should be considered transitional and, over time, should give way to a broad cap and trade program where the market *fully* directs the most efficient and cost effective emission reduction activities.

Combined Heat and Power (CHP)

CHP can and should be an important tool in helping the state to meet its GHG emission reduction goals and we believe that the draft Plan does a good of laying out the GHG benefits of CHP as well as identifying many of the barriers to further deployment of this important technology.

Many, including the CEC, ETAAC, NARUC and several U.S. states have recognized the benefits of CHP in meeting heat and power needs in a GHG-efficient manner. While the Plan recognizes these benefits, unless significant and specific actions are taken to encourage efficient CHP development, and to remove the barriers to this development, the very realistic targets for CHP, as envisioned by the Plan, cannot be realized.

BP supports the recommendations of the Energy Producers and Users Coalition, in their August 11 letter (attached), which lays out recommendations for CARB so that the benefits of CHP can be fully realized.