June 11, 2015

Ryan McCarthy
Science & Technology Policy Advisor
California Air Resources Board
1001 "I" St. Sacramento, CA, 95814
California Air Resources Board

Subject: Short-lived Climate Pollutant Reduction Strategy

Dear Mr. McCarthy,

Please accept this comment letter on the recently released Short-Lived Climate Pollutant Reduction Strategy concept paper from the Environmental Defense Fund ("EDF").

Short-lived climate pollutants ("SLCP") such as methane, black carbon and fluorinated gasses are powerful climate forcers. Even though they remain in the atmosphere for a shorter amount of time than carbon dioxide, data from the Intergovernmental Panel on Climate Change ("IPCC") suggests that approximately 25% of the manmade global warming experienced today is caused by methane emissions alone, and that number is expected to rise.[1] Accordingly, reducing the emissions of short-lived climate pollutants has never been more important as the deleterious effects of climate change are becoming increasingly evident across our state, and our nation's landscape.

More than ever, the California Air Resources Board's ("CARB") leadership in reducing SLCPs has the potential to make significant impacts in reducing the effects of climate change – especially if the state's actions stimulate reductions beyond our borders. We appreciate this opportunity to provide comments on how the state can make this happen and request these comments be evaluated prior to the development of the final SLCP plan.

Support for the framework of the SLCP concept paper

As explained in the SLCP concept paper, reducing global SLCP emissions has the potential to cut global warming in half, reduce warming in the Arctic by two-thirds and reducing sea level rise by 25%. In addition, reducing the emissions of pollutants like methane, such as from oil and gas operations, can also result in numerous public health and economic benefits by reducing emissions of co-pollutants and reducing waste of a valuable energy resource. Accordingly, we agree with and support the strategy's focus on prioritizing actions with diverse and numerous benefits both inside and out of the state.

[1] *See Methane: The other important greenhouse gas*, EDF.ORG, www.edf.org/methane (last visited June 11, 2015), (EDF calculation based on IPCC AR5 WGI Chapter 8).

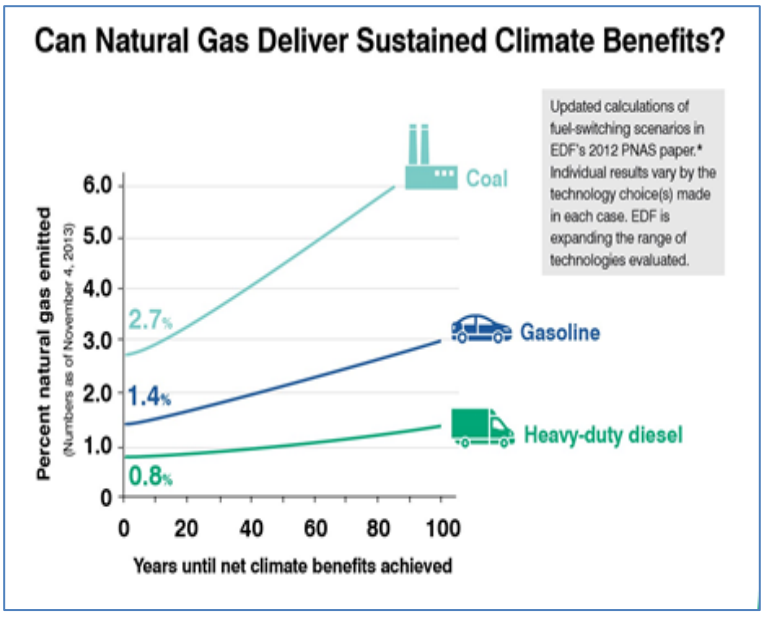
In addition, we support the consideration of the global warming potential of short-lived climate pollutants on both a 20-year and 100-year scale. As demonstrated in the SLCP concept paper, the variance in the impact of SLCP's on the climate between the two time-scales clearly illustrates how large of an impact they have over the next few decades– and how important it is to achieve reductions as soon as possible. This framing also illustrates the magnitude of immediate benefits to be had, and the cost-effectiveness of reducing pollutants like methane, which is 84 times as potent as CO_2 over the first 20 years since it is released.

Additional direction and clarification is needed for actions on upstream oil and gas emissions

It is widely documented that California imports a vast majority of the natural gas it uses (approximately 90%).[2] This gas is used to produce about 60% of the electricity generated in-state, used to heat homes and businesses, and increasingly used to power natural gas cars and trucks.[3]

Natural gas can replace fuels like coal (for electricity), and gasoline / diesel (for transportation fuels). As natural gas is combusted, it can result in significantly reduced emissions of hazardous air pollutants and particulate matter while also, in many cases, resulting in significantly reduced emissions of greenhouse gases ("GHGs"). For example, the average emissions rate from U.S. natural gas-fired generation is 1135 lbs/MWh of carbon dioxide, while the average emission rate from coal-fired generation is 2,249 lbs/MWh of carbon dioxide.[4] Similarly, use of natural gas in trucks in lieu of diesel can deliver 20-30% reductions in CO2 emissions.

Unfortunately, leaked natural gas can undermine, or potentially eliminate for decades the CO2 benefit of fuel switching. According to an EDF co-authored paper in the *Proceedings of the National Academy of Sciences* from 2012, updated as shown on the graph (right), the climate damage associated with natural gas based electric power generation exceeds that associated with coal-powered electricity for some period of time if more than 2.7% of natural gas is leaked across the value chain.[5] Similarly, for on-road transport, a natural gas leakage rate of about 0.8% can undermine for a period of time the



[2] *California Energy Almanac: Natural Gas Supply By Region*, CA.GOV, http://energyalmanac.ca.gov/naturalgas/natural_gas_supply.html (last visited June 11, 2015).
[3] *California Energy Almanac: Total Electricity System Power*, CA.GOV, http://energyalmanac.ca.gov/electricity/total_system_power.html (last visited June 11, 2015).
[4] Clean Energy, epa.gov http://www.epa.gov/cleanenergy/energy-and-you/affect/air-emissions.html (last visited June 11, 2015).
[5] Alvarez et. al., *Greater focus needed on methane leakage from natural gas infrastructure*, PNAS, vol. 109, no. 17, 6435–6440 (2012) , *available at* www.pnas.org/cgi/doi/10.1073/pnas.1202407109.

climate benefit of using natural gas to replace diesel fuel.[6]

CARB has a legal duty to take action to minimize upstream leakage of methane from imported natural gas

Pursuant to AB 32, California's Global Warming Solutions Act of 2006, the California Air Resources Board has a duty to take action to ensure that physical upstream leakage of natural gas – gas escaping from pipes and apparatuses producing and transporting fuels imported into California – does not undermine the climate benefit of using that natural gas in California. According to AB 32, "to the extent feasible in furtherance of achieving GHG reduction goals, the state board shall minimize leakage."[7] The law defines leakage as "a reduction in emissions of greenhouse gases within the state that is offset by an increase in emissions of greenhouse gases outside the state."[8] Thus, while AB 32 does not require CARB to reduce physical leakage of natural gas from pipes and apparatuses outside of the state, to the extent those emissions qualify under the legal definition of "leakage" because they offset / undermine the climate benefit of using natural gas in-state (such as from power generation, heating and cooling, or transportation fuels), the state board has an obligation to minimize them. Under a plain reading of AB32, written into the law is a direction to the board to minimize the emissions of energy sources (i.e. natural gas) procured from outside the state (90% of the fuel we use) that undermine the efforts taken within California to reduce GHGs.

Thankfully, ample evidence suggests that significant opportunities exist to minimize emissions of natural gas before it reaches its end-use in California – and that the California Air Resources Board can play a major role. These opportunities exist in many venues and forms, from working with and supporting other states' efforts to pass responsible oil and gas regulations, to supporting the adoption of federal oil and gas rules to reduce upstream and midstream methane emissions, to working with energy agencies like the Federal Energy Regulatory Commission ("FERC") and the Pipeline and Hazardous Materials Safety Administration ("PHMSA") to manage pipeline emissions. Below, we offer more context and comment on the avenues CARB should pursue to meet its obligation to reduce leakage under AB 32 and mitigate upstream emissions of methane undermining the climate benefits of using natural gas in California.

CARB should work with other states to ensure that states from which California imports natural gas adopt regulations to minimize methane emissions production, gathering and processing.

As stated above, California relies on energy producing basins in other states across the U.S., (primarily the Western U.S.). Some of these states like Colorado[9] and Wyoming[10] have either

[6] Camuzeaux et. al., *Influence of Methane Emissions and Vehicle Efficiency on the Climate Implications of Heavy-Duty Natural Gas Trucks*, Environ. Sci. Technol. 49, 6402−6410 (2015), available at http://pubs.acs.org/doi/pdf/10.1021/acs.est.5b00412.

[7] California Global Warming Solutions Act §38562(b)(8).

[8] California Global Warming Solutions Act §38505(j).

[9] In February 2014, the Colorado Air Quality Control Commission adopted new requirements to directly control emissions of methane. The approaches proposed by Colorado include, but are not limited to stringent leak detection and repair provisions, retrofit requirements for key high-emitting existing sources, and targeted reductions from under-regulated sources of emissions associated with well maintenance activities.

passed regulations that reduce methane leakage, or are in the process of doing do. Others however have done very little. Accordingly, for California to minimize leakage as required under AB32, the state should work to encourage the adoption of stringent federal or state methane reduction standards applicable in the states that produce natural gas which is used in California.

One potential venue for engagement is to work with the Western Governors' Association ("WGA") to ensure all western energy producing states implement regulations to control methane pollution. The WGA is a body representing the Governors of the 19 Western states, including California, designed to provide a platform for interstate discussions and a foundation for policy. Recently WGA unanimously adopted Policy Resolution 2015-02, titled "Methane Emission Regulation".[11] The Brown administration played an important role in ensuring the passage of a strong policy on methane in this resolution that recognizes the impact human activities have on air quality and that regulating and reducing methane emissions provides economic value to the oil and gas producing states and the operators that produce in them.

By adopting strong standards in California and then working within WGA to encourage other western states to embrace the opportunity that Resolution 2015-02 represents, California can minimize methane leakage relevant to protecting the gains observed under AB32 while also providing economic and public health benefits across the West.

CARB should continue to share its expertise with the Federal Government and support stringent national regulations to minimize methane emissions from oil and gas operations

California is poised to take a leadership position in addressing the emissions of short lived climate pollutants from oil and gas operations through a series of regulations under development at CARB and the California Public Utilities Commission ("CPUC"). As these regulations are developed, the state's overall plan to mitigate emissions of SLCPs will become more tangible, providing concrete evidence of the state's steadfast commitment to climate – and laying out a framework for others to follow.

However, just laying out a framework for others to follow is not enough. That framework must be robust, and California must take proactive efforts to support similarly robust efforts by others. We appreciate the recognition of this strategic direction as outlined in the concept paper, and offer two important suggestions to control emissions of methane.

First and foremost, for California to lead, in-state regulations must be rigorous. Accordingly, we urge CARB to finalize an SLCP final plan that includes stringent methane rules at home, so the content of those rules, in addition to the form, serves as a model for others to follow. Unfortunately, as currently written the draft oil and gas regulations fail to meet this standard because of weak inspection and maintenance ("I&M") repair frequency provisions (allowing operators to use annual I&M frequency). As we have commented to CARB, we urge the modification of the oil and gas regulations to require quarterly I&M prior to rule completion.

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[10] The Wyoming Environmental Quality Council recently adopted new rules for the Upper Green River Basin (an ozone non-attainment area). The rules require quarterly leak detection and repair for many facilities and other measures designed to reduce emissions from the oil and gas sector.

[11] Western Governors Association, Policy Resolution 2015-02: Methane Emissions Regulation (2015).

Second, multiple agencies across the federal government are in a position to benefit from California's experience, and support, on this issue. The Bureau of Land Management ("BLM")[12] and U.S. Environmental Protection Agency ("EPA")[13] for example, are in the process of developing rules for oil and gas development across the U.S. Since existing state rules provide a blueprint for national rules, both EPA and the BLM will look to states like California with existing regulatory frameworks that reduce methane emissions in developing their rules. California, a major oil and gas producing state, should support rigorous rules coming from these agencies.

CARB should work with other agencies like PHMSA and FERC to set and implement uniform standards that reduce the emissions of methane emissions from interstate pipelines

At present, CARB, the California Energy Commission ("CEC"), and the CPUC are working on science studies, policy development, and new regulations to limit natural gas leakage from high-pressure intra-state pipelines and natural gas distribution systems. At the same time, PHMSA completed a study and is preparing regulations to reduce natural gas leakage from gathering systems and interstate pipelines. Likewise, FERC recently issued a final policy to provide streamlined cost recovery for pipeline modernization projects decrease methane leaks and emissions.[14] Accordingly, in concert with the ongoing CPUC regulation development and CEC IEPR work, the CARB SLCP plan presents an important opportunity for California to pave the way for strong federal rules and raise awareness of methane leakage from interstate pipelines. We urge CARB to work with PHMSA to support the promulgation of strong pipeline integrity rules and with FERC to ensure that interstate pipeline operators have sufficient economic incentives to reduce or eliminate leaks using state-of-the-art leak detection systems and management practices.

Thank you for your consideration of these comments. Please feel free to contact us for any questions or concerns you may have.

Sincerely,

Timothy O'Connor
Senior Attorney, Environmental Defense Fund

Amanda Johnson
Legal Fellow, Environmental Defense Fund

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[12] *Notice to Lessees and Operators of Onshore Federal and Indian Oil and Gas Leases (NTL-4A)*, BLM.GOV http://www.blm.gov/wy/st/en/programs/energy/Oil_and_Gas/docs/ntl_4a.html (last visited June 11, 2015).

[13] FACT SHEET: EPA'S STRATEGY FOR REDUCING METHANE AND OZONE-FORMING POLLUTION FROM THE OIL AND NATURAL GAS INDUSTRY, EPA.GOV, *available at* http://www.epa.gov/airquality/oilandgas/pdfs/20150114fs.pdf (last visited June 11, 2015).

[14] FERC Final Policy Statement on Cost Recovery Mechanisms for Modernization of Natural Gas Facilities, FERC.GOV https://www.ferc.gov/whats-new/comm-meet/2015/041615/G-1.pdf (last visited June 11, 2015).