

April 10, 2017

VIA ONLINE SUBMISSION

Mary D. Nichols, Chair
Air Resources Board
California Environmental Protection Agency
1001 I St
Sacramento, CA 95814

RE: Honeywell International Inc. Comments on the 2017 Climate Change Scoping Plan Update: The Proposed Strategy for Achieving California's 2030 Greenhouse Gas Target

Dear Chair Nichols,

Honeywell International Inc. ("Honeywell") submits these comments in response to the Air Resources Board's (ARB) "2017 Climate Change Scoping Plan Update: The Proposed Strategy for Achieving California's 2030 Greenhouse Gas Target" ("Proposed Strategy"). We appreciate the opportunity to provide input into ARB's process to update the scoping plan, particularly as it pertains to the opportunity to reduce emissions of high-global-warming-potential ("high-GWP") substances.

I. INTRODUCTION

Honeywell is a global leader in providing technologies and innovations that can help the world solve its energy and environmental challenges. Our Fluorine Products business is a recognized leading innovator in the development of environmentally preferable fluorocarbons for use as refrigerants, foam blowing agents, solvents, propellants, and other uses. Since the 1990s, we have helped businesses replace ozone-depleting substances (ODS) in these applications with alternatives that are more energy efficient and have less impact on the stratospheric ozone layer and global climate change.

Honeywell supports ARB's proposed "Alternative 3: All Cap-and-Trade" and opposes reducing the limit on the use of offset credits. Emissions of high-GWP substances used as refrigerants, foam blowing agents, solvents, and propellants are an area of growing greenhouse gas (GHG) emissions, as ARB recognizes in the Proposed Strategy. The American Carbon Registry recently began registering projects under a methodology that would incentivize additional reductions of high-GWP substances in foam-blowing applications by awarding offset credits to foam manufacturers that switch to low-GWP alternatives blowing agents. The methodology incentivizes an easy, cost-effective way to reduce a significant amount of GHG emissions.

The availability of ACR credits, with possibility of acceptance in the ARB cap-and-trade system is driving early transition away from high-GWP foam blowing agents to low-GWP alternatives. As we have previously discussed with ARB Staff, recognizing use of ACR foam credits in the ARB cap-and-trade program has the potential to create up to 8 million credits and reduce emissions by 32 million metric tons (MT) of CO_{2e} annually, with a net reduction of 24 million MT annually. In other words, these particular offset credits would yield three times as many GHG reductions as the number of credits recognized for compliance use in the cap-and-trade program.

We strongly support continuation of the cap-and-trade program, and current limits on the use of offset credits because of the significant potential net benefit for the environment, and because of the certainty it would provide companies like Honeywell and its customers that have invested in environmentally preferable solutions.

II. COMMENTS

Background. California has long been a leader in combating climate change. The Golden State pioneered the development and implementation of a cap-and-trade program, pushed the boundaries of renewable energy, and successfully spearheaded an international climate agreement, all while growing and maintaining the sixth-largest economy in the world. Globally and in the U.S. the leading source of GHG emissions remains carbon dioxide, but fluorinated gases, and particularly hydrofluorocarbons (HFCs), are the *fastest growing* sources of GHG emissions. While California and the Federal Government have taken steps and developed plans to curb HFC use, it will be years before mandatory emission reductions are realized. California is uniquely positioned to encourage the industry to accelerate the inevitable transition to low-GWP alternatives and ensure that up to 24 million MT of CO_{2e} emissions annually—between now and 2020—are not released into our atmosphere.

HFCs used as foam-blowing agents are responsible for four percent of the total GHG emissions in California, but, as the ARB noted in its Final Short-Lived Climate Pollutant (SLCP) Strategy in March 2017, total annual **HFC emissions are expected to increase 60% under a business-as-usual scenario by 2030**. Reducing HFC emissions in the near-term is particularly important because HFCs are short-lived in the atmosphere, meaning that they are significant contributors to global warming for a range approximating 10 to 15 years after they are released into the environment, as opposed to carbon dioxide, which lingers in the atmosphere, and contributes to its warming, for around 100 years after the gas is emitted. Consequently, reducing HFC emissions **now** can significantly contribute to near-term global warming mitigation.

California has already identified and prioritized the reduction and phase-out of HFCs through the SLCP Strategy. The opportunity is ripe for further policies and regulations that incentivize foam manufacturers to switch to non-HFC blowing agents. Foam manufacturers, if incentivized, have the potential to generate approximately **8 million carbon credits and avoid nearly 24 million MT CO_{2e} emissions annually**.

Such early action emission reductions have the added benefit of being irreversible reductions. Once a non-HFC blowing agent is used to create foam, the HFC blowing agent has been totally replaced and will never be emitted as a result of use of that foam.

ACR Methodology. ARB can take action now to accelerate the transition to low-GWP foam alternatives, with a significant near-term environmental benefit, by continuing the cap-and-trade program, including the use of offset credits, and establishing a program consistent with the American Carbon Registry's (ACR's) foam methodology, described below. Again, such a program would have the potential to avoid nearly 24 million MT of CO₂e annually, or the equivalent of any one of the following:

- Over 5.2 million passenger cars removed from the road for one year (in 2005, about 14 million passenger cars were operated on California roads);
- Over 57.0 million barrels of oil saved per year (California consumes about 320 million barrels of oil per year);
- One year of electricity use by over 4.6 million average California households; or
- Over 12.8 million tons of waste being recycled instead of going to a landfill in California.

In April 2016, ACR published a methodology that awards credits eligible for use on voluntary carbon markets to foam manufacturers who replace high-GWP HFC blowing agents with low-GWP ones, such as hydrofluoroolefins (HFOs). The methodology awards credits representing the GHG reductions resulting from the avoided emissions of HFC blowing agent and a portion of the projected leakage of HFC from the foam during the first ten years of the foam's life, which varies depending on the type of foam (see table, below). The methodology also captures significant additional benefit to the environment because it uses an **extremely conservative** methodology that does not issue credits for the emissions avoided after the first ten years and in the end-of-life disposal of the foam, which are about, on average, 75% of the lifetime emissions (depending on the type of foam application).

Private companies have already submitted projects to generate credits under the ACR methodology. For instance, Honeywell is developing projects that would generate 53,000 credits, and achieve a net reduction of 134,000 MT of CO₂e emissions, for 2014 and 2015 conversions to a low-GWP HFO blowing agent, Solstice LBA. However, because ACR credits issued under this methodology are currently limited to use in the voluntary carbon markets, where the value is much lower than it would be on a compliance market such as California's, requests for credits are not expected to exceed 100,000 credits per year between now and 2020, when U.S. EPA SNAP prohibitions on high-GWP HFCs take effect.

The current unavailability of compliance markets for use of the ACR credits means that the current incentives for increasing near-term adoption of low-GWP blowing agents are inadequate. **The ARB could make adopting low-GWP foam considerably more**

economically attractive by continuing the cap-and-trade program and approving the use of ACR foam credits in the California carbon market. The potential to use these credits for compliance with the California GHG reduction programs will increase the value of ACR credits giving foam manufacturers an incentive to convert to low-GWP foam-blowing agents well in advance of the EPA phase-out. Approving this incentive has the potential to generate up to 8 million credits and reduce emissions by 32 million MT of CO₂e annually, with a net reduction of up to 24 million MT CO₂e annually.

The ACR credits can be generated by foam manufacturing facilities in California that switch to eligible non-HFC blowing agent. There are **at least six California facilities** manufacturing HFC-containing polyurethane foams for spray and panel applications which, with an incentive to convert to a low-GWP blowing agent, could generate **416,000 credits annually with net reduction of 1.1 million MT** of avoided carbon-equivalent emissions annually in California alone.

ARB Action. The ARB can take the following steps to incentivize and capture the benefit of early adoption of low-GWP foam-blowing agents:

1. Extend the existing cap-and-trade program, with the current offset provision;
2. Approve an offset protocol consistent with ACR's foam methodology. This action will increase the use of the methodology and capture several years of reductions otherwise left on the table; and
3. Ensure that early adopters – those facilities that act prior to formal adoption of the program – are eligible for credits, consistent with the ACR methodology.

Authorizing the use of credits issued under ACR's foam methodology in California will (1) ensure low-GWP foam credits have long-term value and (2) accelerate the transition away from high-GWP HFCs in the foam manufacturing industry. Below is a table of anticipated reductions from the ARB actions described above. As shown in the table, if the industry were to take full advantage of the ACR methodology—as would more likely be the case if ARB adopts the incentive measures recommended in this paper—to accelerate the transition to low-GWP blowing agents—the conversions would have the potential to reduce annual emissions as shown below.

**Potential Net Annual GHG Reductions Resulting from
California Authorizing Use of ACR Methodology**

Application	Blowing Agent	Region	Annual vol (M lbs)	CO2e avoided (lifetime M MT)	Credits generated (M)	Net Environmental Benefit (M MT CO2e)
XPS	134a	US/Canada	18	11.7	3.7	8.0
XPS	152a	US/Canada	4	0.2	0.2	-
Panel	245fa	N. America	9	4.2	0.6	3.6
Panel	134a	N. America	3	1.9	0.6	1.3
Spray	245fa	US/Canada	14	6.5	1.9	4.6
Spray	365mfc/227ea	US/Canada	5	2.2	0.6	1.6
Appliance	245fa	US/Mexico	11	5.1	0.3	4.8
Total			64	31.8	7.9	23.9

III. CONCLUSION

Thank you for this opportunity to share our comments on the Proposed Strategy. Honeywell supports extending the cap-and-trade program and believes that the continued use of offset credits can help California achieve its GHG-reduction goals and in a cost effective manner. If you have any further questions, please do not hesitate to contact Amy Chiang at amy.chiang@honeywell.com or Dave Stirpe at david.stirpe@honeywell.com.

Sincerely,



Sanjeev Rastogi
Business Director, Honeywell Fluorine Products