

Memorandum of Understanding Between the Semiconductor Industry Association (SIA) the United States Environmental Protection Agency

I. INTRODUCTION

A. This Memorandum of Understanding (MOU) is a voluntary agreement between the Semiconductor Industry Association (SIA) and the United States Environmental Protection Agency (EPA). SIA and EPA are hereinafter referred to as the "Partners." The continuing, collaborative efforts of EPA and SIA to reduce emissions of PFCs (as defined hereinafter) from the U.S. semiconductor industry, including this voluntary agreement, shall be referred to as the "PFC Reduction/Climate Partnership" (Partnership).

B. This MOU (1) builds on the substantial progress achieved by the U.S. semiconductor industry and EPA over the last five years through the "PFC Emission Reduction Partnership for the Semiconductor Industry" and (2) supports the international agreement reached through the World Semiconductor Council (WSC) by SIA and other trade associations representing semiconductor manufacturing companies throughout the world (hereinafter referred to as the "WSC Agreement").

C. The purpose of the Partnership is to reduce PFC emissions from semiconductor manufacturing operations. The Intergovernmental Panel on Climate Change (IPCC) has identified PFCs as potent greenhouse gases with long atmospheric lifetimes.

D. SIA is signing this MOU on behalf of the group of companies listed in Appendix I, which are hereinafter referred to as "participating companies." Other semiconductor manufacturing companies that wish to work collaboratively to reduce PFC emissions may do so either by becoming participating companies or by entering into separate voluntary agreements with EPA.

E. SIA is signing on behalf of the participating companies collectively and not as the agent for any individual company. This MOU applies only to the U.S. semiconductor manufacturing operations of the participating companies.

II. PARTNERSHIP GOAL

The Partnership Goal, which is designed to support the WSC Agreement, is to reduce the annual absolute PFC emissions of the participating companies collectively by ten percent (on an MMTCE basis) below the 1995 baseline PFC emissions of these companies before the end of 2010.

III. BACKGROUND AND GENERAL PRINCIPLES

A. The Partners recognize that (1) there is a very high growth rate in the demand for semiconductor devices; (2) the manufacture of increasingly complex semiconductor devices currently requires increased use of PFCs; and (3) there are no currently known replacements for

PFCs in semiconductor manufacturing, despite the industry's continuing efforts to develop technically feasible alternatives. In light of these three facts, the Partners also recognize that the Partnership Goal will be very challenging and that the semiconductor industry may need to make substantial voluntary investments in order to reach this goal.

B. U.S. semiconductor manufacturers participate in a highly competitive global industry. Restrictions on the availability or use of important materials such as PFCs could significantly affect the industry's ability to compete globally. Moreover, restrictions on the availability of semiconductors could limit the use or delay the introduction of products or devices that are used in energy-saving applications and therefore benefit climate protection.

C. The Partners will use this MOU to support the global efforts of the WSC to reduce PFC emissions worldwide. The Partners recognize that an industry-wide strategy will result in greater environmental protection by this highly globalized industry.

D. The following PFCs are utilized by the industry and are the subject of this MOU: perfluoromethane (CF₄), perfluoroethane (C₂F₆), sulfur hexafluoride (SF₆), nitrogen trifluoride (NF₃), trifluoromethane (CHF₃), and perfluoropropane (C₃F₈) (herein referred to collectively as PFCs). The Partners are mindful that, as semiconductor manufacturing processes evolve, other process chemicals with significant global warming potential may be added to this list.

E. Nothing in this MOU shall constrain the Partners from taking actions relating to PFCs that are authorized or required by law.

IV. SIA RESPONSIBILITIES

A. *Emission Reductions*: SIA and the participating companies will monitor progress toward the Partnership Goal and will support the Partners' efforts to reduce PFC emissions by (1) sharing information about potential PFC emission reduction processes and technologies that are not considered confidential; and (2) adopting technically feasible, cost-effective, and commercially available emission reduction techniques.

B. *Emissions Reporting*: Because the Partners recognize that PFC emissions data from individual companies have potential competitive significance, the Partners will designate a mutually acceptable third party (the Third Party) to collect emissions data annually from each participating company. By compiling such data, the Third Party will prepare an Annual PFC Emissions Report, which it will endeavor to submit to EPA no later than April 15th of each year for the previous year. The Report will include: (1) the aggregate (not company-specific) PFC emissions from all participating companies on an MMTCE basis; and (2) the aggregate (not company-specific) emissions of each PFC covered by this MOU from all participating companies on an MMTCE basis.

C. *Data Quality*: Each participating company will estimate its annual PFC emissions by using one of the Intergovernmental Panel on Climate Change (IPCC) Good Practice Inventory Tier 2 Methods for the Semiconductor Industry (IPCC Tier 2 Methods). For purposes of this paragraph, IPCC Tier 2 Methods shall mean the IPCC Tier 2 Methods in place as of August 1, 2000 or the latest version of such Methods mutually acceptable to the Partners.

Each participating company will prepare and submit to the Third Party a written explanation of the methodology it used to estimate its PFC emissions (hereinafter referred to as a "Methodology Write-Up"). In order to allow the Partners to have continued confidence in the reliability of the Annual PFC Emissions Reports, the Third Party will make available for review by EPA on the Third Party's premises (1) the Methodology Write-Ups and (2) the PFC emissions estimate for each company. In order to address the confidentiality concerns of the participating companies, the Third Party will remove company-identifying information from all such documents before making them available for EPA review.

The Third Party will make the documents available to EPA in such a way that EPA can match the individual emissions reports with the corresponding Methodology Write-Ups. EPA may review the Methodology Write-Ups to determine whether participating companies have estimated their emissions in accordance with the IPCC Good Practice Inventory Tier 2 Methods for the Semiconductor Industry.

D. *Interim Progress*: The Partners agree to publish a progress report by December 15, 2005, detailing the progress that has been made toward achieving the Partnership Goal. In addition, the Partners agree to hold periodic meetings to review progress on finding technically feasible, cost-effective, and commercially available approaches for reaching the Partnership Goal.

E. Each participating company will continue to evaluate and adopt one or more of the following strategies to reduce their PFC emissions to the extent that such strategies are appropriate in terms of protecting worker safety and the environment and are technically feasible, cost-effective, and commercially available: (1) more efficient use of PFCs in the manufacturing process; (2) use of substitute compounds; and (3) recycle and/or abatement options.

F. SIA and the participating companies agree that the activities they undertake in connection with this MOU are not intended to provide services to the Federal government and that they will not submit a claim for compensation based on this MOU to any Federal agency.

V. EPA RESPONSIBILITIES

A. *Support for Emission Reduction Efforts*: EPA will (1) participate in and support conferences to share information on emission reduction technologies; (2) address regulatory barriers that may impede voluntary, worldwide emission reduction strategies; (3) and recognize SIA and the participating companies for their emission reduction commitment, technical leadership, and achievements over time.

B. *Data Quality*: EPA will work with SIA and the IPCC to ensure that the IPCC Good Practice Inventory Tier 2 Methods for the Semiconductor Industry are reliable, accurate, and practical. EPA will also work with SIA to develop, if possible, a data verification method that can be used to self-certify emissions reductions. Upon request by SIA or a participating company, EPA will also work with individual companies to record and verify PFC emissions reductions. In all cases, EPA will work to ensure that emissions are evaluated and reported in such a way as to protect confidential business information. The Partners expect that companies

that possess high quality emission reduction data will be in a preferred position to participate in any future program that provides appropriate rewards and recognition for early action.

C. *International Harmonization*: EPA will endeavor to support the efforts of the WSC to reduce global PFC emission reductions in the semiconductor industry worldwide, among other things by working with other governments to encourage the use of voluntary agreements similar to this MOU.

D. EPA acknowledges the benefits to the environment of the voluntary actions to reduce PFC emissions by SIA and the participating companies. EPA also acknowledges the significant contributions that SIA and the participating companies have made to advance the technical understanding of PFC emissions from semiconductor manufacture and towards the development and adoption of emission reduction methods. EPA expects to continue to work cooperatively with SIA and the participating companies, as well as other stakeholders, on any future activities relating to these emissions, with full recognition of the voluntary contributions of SIA and the participating companies.

E. *Designation of Single Liaison*: EPA will designate a single liaison to coordinate with SIA on the implementation of this MOU and other activities of the Partnership.

F. *Availability of Appropriations*. This MOU is not a funds-obligating document. All of EPA's activities are subject to the availability of appropriations.

VI. OTHER ISSUES

A. *Modification*: This MOU can be modified only by means of a document signed by both parties, including modifications to include additional compounds within the scope of the MOU or to add additional participating companies to Appendix I; provided, however, that a participating company may remove its name from Appendix I, and thus cease to be a participating company, by delivering written notice to both Partners.

B. *Effective Date and Termination*: The Partners agree that the terms outlined in this MOU will become effective when both Partners sign it. The Partners agree that either Partner may terminate this MOU at any time, for any reason, with no penalty. This MOU terminates on the date the Annual PFC Emissions Report for 2010 is submitted to EPA unless the MOU is extended in writing by the Partners.

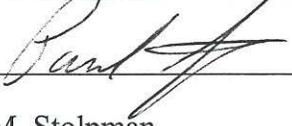
C. *Effect on Existing MOUs*: The existing Memoranda of Understanding between EPA and participating companies that are part of The PFC Emission Reduction Partnership for the Semiconductor Industry are terminated as of the date on which this MOU is signed by both Partners.

D. *Enforceability*: This is a voluntary agreement that expresses the good-faith intentions of the Partners and is not enforceable by any party.

E. *Authority*: The undersigned hereby execute this Memorandum of Understanding on behalf of the Partners listed below. The participating companies listed in Appendix I have duly

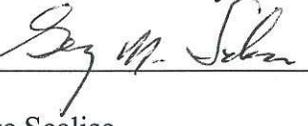
authorized SIA to sign this MOU on their behalf collectively and not as the agent for any individual company.

For the U.S. Environmental Protection Agency:

Signature:  Date: 11/19/2001

Name: Paul M. Stolpman,
Title: Director, Office of Atmospheric Programs

For the Semiconductor Industry Association

Signature:  Date: Jan 16, 2001

Name: George Scalise
Title: President