

TITLE 17. CALIFORNIA AIR RESOURCES BOARD

NOTICE OF PUBLIC HEARING TO CONSIDER THE ADOPTION OF A PROPOSED REGULATION TO REDUCE GREENHOUSE GAS EMISSIONS FROM CALIFORNIA SEMICONDUCTOR OPERATIONS

The Air Resources Board (ARB or the Board) will conduct a public hearing at the time and place noted below to consider adoption of a regulation to reduce greenhouse gas (GHG) emissions from semiconductor and related devices (semiconductor) operations.

DATE: February 26, 2009

TIME: 9:00 a.m.

PLACE: California Environmental Protection Agency
Air Resources Board
Bryon Sher Auditorium
1001 I Street
Sacramento, California 95814

This item will be considered at a two day meeting of the Board, which will commence at 9:00 a.m., February 26, 2009, and may continue at 8:30 a.m., February 27, 2009. This item may not be considered until February 27, 2009. Please consult the agenda for the meeting, which will be available at least 10 days before February 26, 2009, to determine the day on which this item will be considered.

For individuals with sensory disabilities, this document and other related material can be made available in Braille, large print, audiocassette, or computer disk. For assistance, please contact ARB's Reasonable Accommodations/Disability Coordinator at (916) 323-4916 by voice, or through the California Relay Services at 711, to place your request for disability services, or go to <http://www.arb.ca.gov/html/ada/ada.htm>.

If you are a person with limited English and would like to request interpreter services to be available at the Board meeting, please contact ARB's Bilingual Manager at (916) 323-7053 within 7-10 business days prior to the meeting date.

INFORMATIVE DIGEST OF PROPOSED ACTION AND POLICY STATEMENT OVERVIEW

Sections Added: Proposed adoption of California Code of Regulations, title 17, Subchapter 10, Article 4, Subarticle 2. Semiconductor Operations, sections 95320, 95321, 95322, 95323, 95324, 95325, and 95326.

Background:

The California Global Warming Solutions Act of 2006 (Assembly Bill 32, AB 32, Núñez, Ch. 486, Stats. 2006) creates a comprehensive, multi-year program to reduce greenhouse gas (GHG) emissions in California. AB 32 also requires the Air Resources Board (ARB or Board) to identify a list of discrete early action greenhouse gas reduction measures by June 30, 2007, and to adopt regulations to implement listed early action measures. These early action measures must be enforceable no later than January 1, 2010. Early action measures must also achieve the

maximum technologically feasible and cost-effective reductions in GHGs from sources or categories of sources. In June 2007, the Board approved a discrete early action measure to reduce emissions of fluorinated greenhouse gases from semiconductor operations.

Description of Proposed Regulatory Action:

The purpose of this regulation is to reduce fluorinated gas emissions from semiconductor operations. Fluorinated gases are GHGs and are used in cleaning chemical vapor deposition (CVD) tool chambers where thin films are deposited on wafers, and in etching integrated circuits into those thin films. The regulation pertains to fluorinated gases used in these processes and requires an owner or operator of a semiconductor operation that emits more than 0.0008 million metric tons of carbon dioxide equivalent per year to comply with emission standards effective January 1, 2012. Operators that are replacing 150 millimeter wafer process tools with newer 200 millimeter or larger wafer tools would have until January 1, 2014 to comply.

The proposed semiconductor regulation would set new maximum allowable emission limits for semiconductor operations. The emission limits for semiconductor operations are tiered, and vary depending on the quantity of wafers (thin semiconductor material from which integrated circuits or “chips” are made) processed at an operation. All new semiconductor operations established on or after January 1, 2010 will be required to meet the most stringent emission standard, regardless of the quantity of wafers produced.

Reporting requirements specify that an owner or operator must submit annual reports to the permitting agency for emissions occurring in the immediate previous calendar year. The annual reports are to include the amount of fluorinated gases used, wafer processing volume, emissions calculations, and other information.

Recordkeeping requirements specify that the owner or operator maintain records on quantities of fluorinated gases purchased, as well as records on emission control equipment malfunctions and failures.

Environmental and Economic Impacts

The proposed regulation is estimated to achieve an emissions reduction equivalent to 0.18 million metric tons of carbon dioxide per year. No significant adverse environmental impacts should occur from the proposed regulation. Semiconductor operators may use any combination of three compliance options. The first, process optimization, reduces the volume of fluorinated gases used and emitted, and does not generate by-products. The second, alternative chemistries, uses replacement gases in CVD chamber cleaning. Replacement gases are used more efficiently, and therefore result in lower emissions. The final option, abatement, uses systems that rely primarily on combustors to destroy emissions. Abatement devices generate emissions of nitrogen oxides (NO_x). Semiconductor operations are required to obtain air district permits for abatement devices to ensure that NO_x impacts are minimized. While hydrogen fluoride is also generated by combustors, it is treated effectively with water scrubbers.

Overall, the proposed regulation is not expected to have a significant impact on semiconductor businesses in California. The cost to affected businesses would be approximately \$22 million in initial capital costs and about \$850,000 in annual recurring costs. These costs correspond to \$3.7 million annually over the useful life of the regulation, assumed to be ten years. The cost-effectiveness is estimated to be 21 dollars per metric ton of carbon dioxide equivalent reduced which corresponds to cost estimates for other GHG regulations identified in the Scoping Plan.

Staff also estimated profitability impacts on businesses by calculating the decline in the return on owner's equity (ROE). The threshold value of 10 percent has been used consistently by the ARB staff to determine impact severity. The proposed regulation is expected to result in an average ROE decline of 0.4 percent.

COMPARABLE FEDERAL REGULATION

There is no comparable federal regulation related to reducing greenhouse gas emissions from semiconductor operations.

AVAILABILITY OF DOCUMENTS AND AGENCY CONTACT PERSONS

The Board staff has prepared an Initial Statement of Reasons (ISOR) Report, which includes a summary of the economic and environmental impacts of the proposal, and which describes the basis of the proposed action in more detail. The ISOR is entitled, "Initial Statement of Reasons for Proposed Measure to Reduce Fluorinated Gas Emissions from Semiconductors and Related Devices."

Copies of the ISOR Report with the full text of the proposed regulatory language may be accessed on the ARB's web site listed below, or may be obtained from the Public Information Office, Air Resources Board, 1001 I Street, Visitors and Environmental Services Center, First Floor, Sacramento, CA 95814, (916) 322-2990 at least 45 days prior to the scheduled hearing on February 26, 2009.

Upon its completion, the Final Statement of Reasons (FSOR) will be available and copies may be requested from the agency contact persons identified below, or may be accessed on the ARB's web site listed below.

Inquiries concerning the substance of the proposed regulation may be directed to the designated agency contact persons, Ms. Terrel Ferreira, Manager of the Greenhouse Gas Measures Section, at (916) 445-3526, or by email at tferreir@arb.ca.gov, or Mr. Dale Trenchel, Air Pollution Specialist, at (916) 324-0208, or by email at dtrench@arb.ca.gov.

Further, the agency representative and designated back-up contact persons to whom non-substantive inquiries concerning the proposed administrative action may be directed are Ms. Lori Andreoni, Manager, Board Administration & Regulatory Coordination Unit, (916) 322-4011, and Ms. Trini Balcazar, Regulations Coordinator, (916) 445-9564. The Board has compiled a record for this rulemaking action, which includes all the information upon which the proposal is based. This material is available for inspection upon request to the contact persons.

This notice, the ISOR and all subsequent regulatory documents, including the FSOR, when completed, are also available on the ARB Internet site for this rulemaking at <http://www.arb.ca.gov/regact/2009/semi2009/semi2009.htm>.

COSTS TO PUBLIC AGENCIES AND TO BUSINESSES AND PERSONS AFFECTED

The determinations of the Board's Executive Officer concerning the costs or savings necessarily incurred by public agencies and private persons and businesses in reasonable compliance with the proposed regulations are presented below.

Pursuant to Government Code sections 11346.5(a)(5), the Executive Officer has determined that the proposed regulation would not impose a mandate on local agencies or school districts. The Executive Officer has further determined pursuant to Government Code section 11346.5(a)(6) that the proposed regulation would result in some additional costs to ARB. In addition, the Executive Officer has determined that the proposed regulatory action would not create costs or savings in federal funding to the state, would not create costs or savings to local agencies or school districts that are required to be reimbursed under Part 7 (commencing with section 17500), Division 4, title 2 of the Government Code, and would not result in other nondiscretionary costs or savings to state or local agencies.

The proposed regulatory action will create costs to local air pollution control and air quality management districts (the "districts"). However, these costs to the districts are recoverable by fees that are within the districts' authority to assess (see Health and Safety Code sections 42311 and 40510).

In developing this regulatory proposal, the ARB staff evaluated the potential economic impacts on representative private persons or businesses. The Executive Officer has initially determined that there will be a potential cost impact on private persons or businesses directly affected as a result of the proposed regulatory action. As explained in the ISOR, the proposed regulation will impact some individual businesses, but the overall statewide impacts are not expected to be significant.

The Executive Officer has made an initial determination that the proposed regulatory action would not have a significant statewide adverse economic impact directly affecting businesses, including the ability of California businesses to compete with businesses in other states, or on representative private persons.

In accordance with Government Code section 11346.3, the Executive Officer has initially determined that the proposed regulatory action would not affect the creation or elimination of jobs within the State of California, the creation of new businesses or elimination of existing businesses within the State of California, or the expansion of businesses currently doing business within the State of California. A detailed assessment of the economic impacts of the proposed regulatory action can be found in the ISOR.

The Executive Officer has also determined, pursuant to title 1, CCR, Section 4, that the proposed regulatory action would affect small businesses. Thirty-eight of 74 operations subject to the proposed regulation are small businesses, those with less than 250 employees. Five of the 38 small businesses will be required to reduce their emissions to comply with the proposed regulation.

In accordance with Government Code sections 11346.3(c) and 11346.5(a)(11), the Executive Officer has found that the reporting requirements of the regulation which apply to businesses are necessary for the health, safety, and welfare of the people of the State of California.

Before taking final action on the proposed regulatory action, the Board must determine that no reasonable alternative considered by the Board or that has otherwise been identified and brought to the attention of the Board would be more effective in carrying out the purpose for which the action is proposed or would be as effective and less burdensome to affected private persons or businesses than the proposed action.

SUBMITTAL OF COMMENTS

The public may present comments relating to this matter orally or in writing at the hearing, and in writing or by e-mail before the meeting. To be considered by the Board, written comments or submissions not physically submitted at the meeting must be received **no later than 12:00 noon, Pacific Standard Time, February 25, 2009**, and addressed to the following:

Postal mail: Clerk of the Board
Air Resources Board
1001 I Street, 23rd Floor
Sacramento, California 95814

Electronic submittal: <http://www.arb.ca.gov/lispub/comm/bclist.php>

Facsimile submittal: (916) 322-3928

Please note that under the California Public Records Act (Government Code section 6250 et seq.), your written and oral comments, attachments, and associated contact information (e.g., your address, phone, email, etc.) become part of the public record and can be released to the public upon request. Additionally, this information may become available via Google, Yahoo, and other search engines.

The Board requests, but does not require, that 30 copies of any written statement be submitted and that all written statements be filed at least 10 days prior to the hearing so that ARB staff and Board Members have time to fully consider each comment. The Board encourages members of the public to bring to the attention of staff in advance of the hearing any suggestions for modification of the proposed regulatory action.

STATUTORY AUTHORITY AND REFERENCES

This regulatory action is proposed under the authority granted to the ARB in sections 38501, 38510, 38560, 38560.5, 38580, 39600, and 39601, Health and Safety Code. This action is proposed to implement, interpret, or make specific sections 38501, 38505, 38510, 38550, 38551, 38560, 38560.5, 39003, 39500, 39600, and 39601, Health and Safety Code.

HEARING PROCEDURES

The public hearing will be conducted in accordance with the California Administrative Procedure Act, title 2, Division 3, Part 1, Chapter 3.5 (commencing with section 11340) of the Government Code.

Following the public hearing, the Board may adopt the regulatory language as originally proposed, or with non-substantial or grammatical modifications. The Board may also adopt the proposed regulatory language with other modifications if the text as modified is sufficiently related to the originally proposed text that the public was adequately placed on notice that the

regulatory language as modified could result from the proposed regulatory action. In the event that such modifications are made, the full regulatory text, with the modifications clearly indicated, will be made available to the public for written comment at least 15 days before it is adopted.

The public may request a copy of the modified regulatory text from the ARB's Public Information Office, Air Resources Board, 1001 I Street, Visitors and Environmental Services Center, First Floor, Sacramento, California 95814, (916) 322-2990.

CALIFORNIA AIR RESOURCES BOARD

/s/

James N. Goldstene
Executive Officer

Date: December 30, 2008