



Gus Ballis
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NEC Electronics America, Inc.
 Roseville Manufacturing Facility
 7501 Foothills Boulevard
 Roseville, CA 95747

Comments Provided At The February 26, 2009 Public Hearing Regarding ARB's Proposed Regulation To Reduce Greenhouse Gas Emissions From Semiconductor Operations"

The NEC Electronics America, Inc. Roseville site (NEC) appreciates the opportunity to comment on the California Air Resources Board's (ARB) proposed regulation, California Code Of Regulations, Title 17, Subchapter 10 (Climate Change), Article 4 (Regulation To Achieve Greenhouse Gas Emission Reductions), Subarticle 2 (Semiconductors and Related Devices), sections 95320-95326. We have analyzed the proposed regulation in detail. We have very serious concerns that have been detailed in our February 4, 2009 comments letter that was submitted to the Board.

I would like to summarize these concerns:

1. Proposed Emission Reduction Target Is Too Aggressive

NEC's most important concern is that the Semiconductor Industry Emission Reduction target of 0.18 MMTCO₂e and the deadlines for meeting this target are far too aggressive. The financial impact on the semiconductor industry in California will be severe and will affect the industry's ability to be competitive in the global market. This is because international groups such as the World Semiconductor Council (WSC) have targeted a 10% emission reduction over a 10-year period versus the 56% reduction over a 2-year period being sought by this proposed regulation. The high cost of abatement will adversely California's semiconductor industry's ability to be competitive.

NEC feels it is reasonable to target a 25% reduction from 2006 levels by January 1, 2012, and require another 25% to be completed incrementally in progressive 2-year periods by AB32's main deadline of 2020. This would require ARB to modify the semiconductor industry's early Emission Reduction target from 0.18 MMTCO₂e to 0.045 MMTCO₂e, and the final target would be 0.09 MMTCO₂e. This is not an unreasonable adjustment because according to ARB staff, the 2000 emissions inventory was determined to be 1.23 MMTCO₂e and the 2006 emissions inventory was 0.27 MMTCO₂e. **This means that semiconductor emissions have already been reduced by 78% from 2000 to 2006.**

Alternative Semiconductor Emissions Reduction Targets			
Year	Statewide Emission Inventory (MMT CO ₂ e)	Emissions Reduction Target (MMT CO ₂ e)	Percent Reduction Compared To 2006
2000	1.23	N/A	N/A
2006	0.27 <i>(June 2008 ARB Report)</i>	0.96	78% <i>(compared to 2000)</i>
2012	0.20	0.07	25%
2014	0.19	0.08	30%
2016	0.16	0.11	40%
2018	0.135	0.135	50%

Considering the current economic recession, it may take several years to obtain the necessary capital for the expensive abatement equipment that will be needed to comply. Please note that the technology for so-called end-of-pipe abatement systems does not actually exist. It can only be completed by manifolded together several smaller thermal abatement units. Recovering the condensed gases from the exhaust, instead of burning it at very high temperatures, which actually creates CO₂, represents the most promising technology. However, the design is still being tested. These are all excellent reasons why ARB should lower the Emission Reduction target and extend the final compliance deadline over multiple incremental periods.

2. Using 2006 As The Base Year Ignores Prior Emission Reductions

Despite promises made by ARB staff, this proposed regulation is using 2006 as the base year for establishing its semiconductor emission reduction target. The use of 2006 as a base year ignores the major gains made by the semiconductor industry in reducing greenhouse gas emissions. ARB staff previously stated that this proposed regulation would acknowledge the proactive steps a semiconductor company had taken under a voluntary agreement with the U.S. EPA to reduce PFC emissions. This agreement, known as the EPA Memorandum of Understanding (MOU) utilizes 1995 as the base year. However, instead of recognizing how far the semiconductor industry has come in the way of reducing emissions, the proposed standard completely ignores these early reductions by using 2006 as the base year when setting the industry's targeted emission reductions. Please note that these reductions were accomplished despite a very significant growth in production during that period.

Sections 38562(b)3 and 38563 of Title 17, give ARB broad authority to provide "early reduction credit where appropriate". ARB has not provided that credit.

NEC believes that early reduction credit can be addressed through either of the following changes:

1. ARB could use 2000 as the base year by using its current 2000 emission inventory estimate, or conduct another state-wide emission inventory assessment. The same reduction target could be applied to the 2000 emission inventory. The maximum emissions limits in Table 1 of proposed section 95323 would then be modified accordingly. Or,
2. Those companies who which have participated in the EPA's MOU program could be allowed to use 2000 as their base year when calculating compliance. NEC's February 4, 2009 comments letter details how to give these companies credit for their prior emissions reductions.

This would be consistent with ARB's prior commitment, (and with the intent of Title 17) to make sure that the MOU companies are credited for their prior efforts to reduce emissions of global warming gases. The current proposed regulation only serves to sanction those MOU companies by forcing them to spend large sums of money to make even greater emissions reductions than they have already achieved. As far as we know, the semiconductor companies represent the only industry in California that has already achieved significant emissions reductions.

3. Economic Impact Analysis Conclusions Are Inaccurate

ARB staff have implied that the intent of having different Tiers is to impose a disproportionate burden of the cost of compliance to upon those companies that ARB feels can best afford it. Given that the economic condition in California is perhaps at its

worst since the Great Depression, we have not seen a clear explanation how ARB ascertained that the 13 companies that will be required to reduce their emissions will be able to obtain \$21.8 million that will be needed to complete the necessary abatement projects completed by January 1, 2012. It is also not acceptable for ARB to amortize the costs over 10 years. These costs are more commonly capitalized by private industry over a 5-year period. This would essentially double ARB's estimated cost of abatement per metric ton from \$21 to \$42. Regardless, where will this money come from during a severe economic recession?

The report states that another 4 semiconductor companies in California will soon be ceasing operations. The financial impact of this regulation will be severe enough that it is very likely that more companies may curtail or terminate operations. At a minimum, it will drive the cost of doing business in California high enough that semiconductor companies will be less competitive in a global market. This could adversely impact future investment in new plants and equipment, which would be devastating to California's semiconductor industry. Two other very important factors that are not accounted for in ARB's economic analysis are future growth in semiconductor production, and the financial impact of other regulations being promulgated by Cal-EPA.

All business that is lost will move to other states or foreign companies, which does not change the effect on global warming. In fact, to the extent production is shifted to locations which are less regulated, the global warming effect will be exacerbated. The emission reduction target is so aggressive that it will require >95% emissions reductions for any new manufacturing equipment that will be needed to support future growth in production.

ARB's methodology used to prepare their Economic Analysis significantly underestimates the cost of compliance, fails to address leakage, and is inaccurate when it states there will be "no significant impact" on "business". If ARB chooses to move forward with this proposed regulation, just 3 semiconductor companies will be targeted to achieve 69% of the State's targeted emission reductions for the semiconductor industry. The condition of the economy in California for the foreseeable future is bleak, at best. It is our hope that it will become clear that the long-term impact of the cost of compliance by the affected 13 companies needs to be reevaluated more carefully.

4. Tier 1 Companies Are Being Unfairly Targeted

NEC is concerned that the proposed regulation unfairly penalizes those companies that are producing more complex products that require the use of more PFC gases per wafer. It is clear that using a simplified method such as emissions per wafer area does not adequately reflect a particular company's operations. The complexity of the semiconductors produced by each company is best reflected by the average number of "masking layers" per wafer. This number can vary widely between among semiconductor companies. The number of masking layers per wafer is very closely associated with the number of "steps" that require the use of PFC gases.

Unless ARB can lower its' Emission Reduction target, it is our proposal that ARB resurvey all of the affected companies and ask them to provide the annual average of masking layers per wafer for 2006. This particular variable is easy for a producer to determine and report. Please note that this is confidential business information. Any claims by an organization or an on-line service that it can provide this information must be considered to be unreliable.

NEC's February 4, 2009 comments letter details an alternative method for establishing Tiers based upon a masking layer factor. While conducting another survey will take additional time, the masking layer variable provides the fairness that AB32 requires, especially when assessing those companies that have already made significant emission reductions

5. NEC Is Opposed To The Proposed Tier System

NEC is strongly opposed to the current proposed tier system. The Economic Analysis does not provide either an explanation of how these tiers were derived and or an adequate explanation of the purpose of the tiers. As stated previously, the proposed standard unfairly burdens 3 companies with 69% of the total emission reductions for the entire semiconductor industry.

Unfortunately, this proposed regulation will sanction those MOU companies that have already made substantial investments to reduce emissions. However, the Tier system could be made more equitable by using the masking layers that I have already mentioned.

6. No Specific Guidance For Air District Permitting

It is our expectation that the large number of devices that will be required to comply with the proposed standard would cause a company's current Air District fees to rise by about 50%. As a solution, we are requesting that the proposed regulation state that a single permit shall be utilized per site for all devices used to reduce the emissions of global warming gases as required by this regulation.

The proposed regulation also has no provisions for requiring the air districts to protect all information submitted by an affected company as, "Confidential Business Information" (CBI). This is an extremely important consideration because some of this information can be used in a detrimental manner by competitors. Although the ARB has strict internal controls for CBI, it should not be assumed that all of the air districts have similar controls. ARB's text for proposed section 95385 for the High Global Warming Potential Refrigerants regulation appears to be a viable model.

SUMMARY

Considering our serious concerns, it is our hope that ARB will reassess the economic impact that this proposed regulation will have on California's semiconductor industry. Section 38560.5(c) establishes two key requirements for discrete early emission reductions: "achieve the maximum technologically feasible and **cost-effective** reductions in greenhouse gas emissions." Moreover, sections 38562(b)3 and 38563 of Title 17, gives ARB broad authority to provide "early reduction credit where appropriate". Unfortunately, ARB's current proposed regulation will require an emissions reduction that is not technologically feasible or cost-effective. AB32 provides ARB the ability to utilize flexible compliance schedules and ARB needs to implement this regulation as it was intended. Unfortunately, the current proposed regulation exceeds the regulatory authority that was granted by AB32.

It is our hope that ARB will address our concerns related to its' proposed standard to reduce the emissions of global warming gases in a manner that is both cost-effective and prevents companies from sustaining a severe financial impact from the high cost of compliance. Alternative methods have been provided to ARB to establish reasonable emission reduction targets that meet the specific requirements of AB32.

We are not a company that disputes the science of whether global warming is occurring. Our past efforts, and our planned future efforts, at reducing the emission of global warming gases clearly demonstrate our commitment to the environment. If leakage of production occurs as we would expect, this regulation will not mitigate and, in fact, may exacerbate a problem that has a global effect. Another facility on another part of this planet will get the lost business that will be inevitably forced out of California by this proposed regulation and it will likely be a company in a third-world country that is making a minimal effort to reduce these emissions. The ARB has a golden opportunity to be a world leader in writing a regulation to reduce the emission of gases that cause global warming. We respectfully urge the Board to reject this proposed regulation and direct ARB staff to form a joint committee with industry representatives to rewrite a regulation that meets the requirements of AB32 and addresses the concerns we have expressed. Thank-you.

