BEFORE THE
CALIFORNIA AIR RESOURCES BOARD

In Re:

Notice of Public Availability of Modified Text and Availability of Additional Documents; PUBLIC HEARING TO CONSIDER ADOPTION OF A PROPOSED CALIFORNIA CAP ON GREENHOUSE GAS EMISSIONS AND MARKET-BASED COMPLIANCE MECHANISMS REGULATION, INCLUDING COMPLIANCE OFFSET PROTOCOLS

COMMENTS OF THE NORTH AMERICAN INSULATION MANUFACTURERS ASSOCIATION

Angus E. Crane
Executive Vice President, General Counsel
NAIMA
44 Canal Center Plaza, #310
Alexandria, VA 22314
(703) 684-0084
acrane@naima.org

August 11, 2011

COMMENTS OF THE NORTH AMERICAN INSULATION MANUFACTURERS ASSOCIATION ON THE CALIFORNIA AIR RESOURCES BOARD'S "Notice of Public Availability of Modified Text and Availability of Additional Documents; PUBLIC HEARING TO CONSIDER ADOPTION OF A PROPOSED CALIFORNIA CAP ON GREENHOUSE GAS EMISSIONS AND MARKET-BASED COMPLIANCE MECHANISMS REGULATION, INCLUDING COMPLIANCE OFFSET PROTOCOLS"

INTRODUCTION

The North American Insulation Manufacturers Association ("NAIMA") has appreciated the opportunity to meet with and provide comments to the California Air Resources Board's ("CARB") proposed California cap on greenhouse gas emissions. NAIMA is the association of North American manufacturers of fiber glass and rock and slag wool insulation products. NAIMA's position on the various issues surrounding CARB's proposed cap and trade program has not changed; therefore, the comments set forth herein should be familiar to CARB as they are reflective of NAIMA's previous comments and letters.

In contrast, CARB has vacillated on its stated position and representations to the fiber glass industry. Even more frustrating is the simple fact that as a key stakeholder – a stakeholder with four manufacturing plants in the State of California which represents significant jobs and financial benefits to the California economy – NAIMA's comments have been largely ignored. The public comment process seems to have been a mere formality without any of the extensive dialogue and exchange of information between NAIMA and CARB resulting in modifications to CARB's regulatory proposal that accommodates manufacturers struggling to do business in California.

Having made this point, NAIMA strongly urges CARB to carefully consider the very valid and justifiable positions set forth in these comments and modify the cap and trade proposal in a way that demonstrates that this has indeed been a legitimate public process.

CARB'S CURRENT CAP AND TRADE PROPOSAL WILL NEGATIVELY IMPACT THE FIBER GLASS INDUSTRY

As these comments demonstrate, the proposed regulations, without certain modifications, may have significant negative consequences to the fiber glass insulation industry in California. Because this regulation would have serious deleterious impacts on the fiber glass insulation manufacturers in the State, it would also have an adverse impact on California's economy. As noted below, the State of California has stated that increased energy efficiency in buildings has the greatest potential for reducing greenhouse gases. Insulation is the quickest, most economically feasible, and most proven means for achieving those reductions. Fiber glass insulation is the most widely-used insulating material in residential and commercial construction and retrofit applications. If California inhibits the manufacture of this material within the State,

it will impair the ability of the State to meet its goal of greenhouse gas reduction and force those needs to be supplied by products made at fiber glass manufacturing facilities located elsewhere in the U.S., Canada, and Mexico.

NAIMA members view climate change regulations as both a threat and an opportunity. Because making fiber glass insulation takes energy,[1] the threat comes largely from the anticipated increase in manufacturing costs, whether from the cost of emissions allowances or from the inevitable increase in the cost of electricity in California. The opportunity comes from the fact that all NAIMA member products made in California are designed to save energy and, by so doing, to also reduce greenhouse gas emissions. In fact, the AB 32 Scoping Plan clearly recognizes the need to make buildings more energy efficient in order to achieve the state-wide emissions reductions required by AB 32. The challenge is to assist the California fiber glass insulation industry and to deal with threats in a way that is fair, reasonable, and predictable. For example, the State's fiber glass plants are readily subject to leakage that should entail free allowances for all three compliance periods. On the opportunity side, CARB should take steps to increase the use of insulation in retrofitting existing buildings in order both to save energy and reduce emissions. An important part of this is to encourage the use of energy efficiency-based carbon offsets, which would not only help businesses in the cap-and-trade system reduce their compliance costs, such efficiency-based offsets would also, as explained in more detail below, have many sought-after co-benefits such as improvements in public health, increased health and safety of building and home occupants, increased home value, and reductions in other pollutants beyond greenhouse gas emissions. In short, NAIMA requests that CARB make NAIMA members' California plants part of the solution and not unfairly chase fiber glass insulation production to nearby out-of-state plants employing out-of-state workers.

This proposal is particularly relevant to NAIMA and its members because NAIMA's members have four (4) manufacturing plants located in California:

- CertainTeed – Chowchilla, California
- Johns Manville – Willows, California
- Knauf Insulation – Shasta Lake, California
- Owens Corning – Santa Clara, California

In addition, virtually all of NAIMA's members' products are used or sold in California. More importantly, NAIMA's members provide important manufacturing jobs to the California economy. Specifically, Owens Corning operates a fiber glass building materials manufacturing facility in Santa Clara. According to public sources, Owens Corning's Santa Clara facility employs an estimated 250 – 499 employees (www.manta.com/c/mmcntlv/owens-corning-sales-inc). Johns Manville operates a fiber glass manufacturing facility in Willows, California. According to public sources, Johns Manville's Willows facility employs between 250 and 499 employees and generates annual revenue of $100 to $500 million (www.manta.com/c/mmcckzn/johns-manville-corp). CertainTeed Corporation operates a fiber

[1] On average, the energy used to make fiber glass insulation is recouped in the first month of service. Thereafter, the insulation saves energy every day for the life of the building.

glass manufacturing facility in Chowchilla, California. According to public sources, CertainTeed's Chowchilla facility employs between 250 and 499 employees and generates annual revenue of $50 to $100 million (www.manta.com/c/mmjhsbb/certain-teed-corp). Knauf Insulation operates a fiber glass manufacturing facility in Shasta Lake, California. According to public sources, Knauf's Shasta Lake facility employs between 100 and 249 employees and generates annual revenue of $50 to $100 million (www.manta.com/c/mm0tt3b/knauf-fiberglass).

California is losing manufacturing jobs – in both traditional and high-tech industries – to other states and nations. One of the key reasons for this exodus from California is the State's existing regulatory requirements and concerns about the future regulatory climate.[2] California's regulatory environment is challenging, time-consuming, complex, duplicative, and costly.

CARB's proposed Cap-and-Trade Proposal is a perfect example of such a regulation. As discussed in greater detail below, the Proposal, as currently written, could ultimately result in closing these plants or curtailing their operations within the State. That outcome would result in more of the California market being supplied by manufacturing facilities in other states, Canada, and Mexico.

Such a result is totally unnecessary. Fiber glass insulation is an important contributor to the California economy, through direct manufacturing, shipment of finished product to markets within California and other western states, and export of product to foreign markets. It also supports the insulation industry and installers, is a critical material for the construction industry, and a much-used material for do-it-yourself consumers. In addition, fiber glass insulation promotes energy efficiency, environmental preservation, and reduces pollutants, including greenhouse gases. Fiber glass is also the most thoroughly tested and researched insulation product on the market. It is the preferred product for more than 80 percent of the insulation market. If fiber glass insulation would not be available, the supplies of alternative insulating materials would not be sufficient to supply the demands of the market. Raising the cost of insulation products by raising the costs of doing business for fiber glass insulation manufacturers or by artificially reducing the supply of available insulating materials will reduce the ability of the State to meet its greenhouse gas emission reduction goals.

BENCHMARK FOR MINERAL WOOL INDUSTRY SHOULD REFLECT NATIONAL PERFORMANCE

Recommended Benchmark

NAIMA had originally urged CARB to rely upon national emissions analysis for determining a benchmark for the fiber glass industry, but CARB indicated it wanted to rely upon California emissions data. CARB did agree, however, to consider 2009 California data which NAIMA provided to CARB in its February 16, 2011, letter. During the March 17, 2011 meeting, CARB indicated that it now might consider using national data to set the benchmark. CARB agreed that

[2] Ross C. Devol, Perry Wong, Armen Bedroussian, Candice Flor Hynek, and David Rice, "Manufacturing 2.0: A More Prosperous California," Milken Institute, June 2009, p. 9.

it would obtain direction from its Board as to whether it could rely upon national data as opposed to California data. CARB agreed to communicate to NAIMA when it has a final decision on use of national data. If national data is allowed, CARB indicated it would like national data by facility. Before NAIMA could agree to provide national data by facility, it would need to know the elements of specificity required for each facility. CARB has agreed to provide those elements of specificity to NAIMA, but NAIMA has yet to receive that information. CARB's current proposal seems to be based on California numbers. NAIMA would like to confer with CARB on how this number was originated.

DOMESTIC MARKETS IMPACT LEAKAGE TO A GREATER DEGREE THAN FOREIGN COMPETITION – MINERAL WOOL SHOULD BE ALLOTTED 100 PERCENT ALLOWANCES

CARB's effort to stop leakage is really an attempt to ensure that emission reductions within the State of California are not offset by emission increases in other jurisdictions by reducing industry flight from California. Therefore, this information, which establishes 1) the potential impact of AB 32 on California insulation production; 2) the ability of existing insulation manufacturing facilities elsewhere in North America to increase or maintain their production to meet market opportunities in California; 3) the potential for transportation-related emissions to increase if in-state insulation manufacturing is replaced by insulation manufacturing in other jurisdictions; and 4) the absence of greenhouse gas regulations in relevant jurisdictions outside California, is most relevant and most important to developing an accurate assessment of leakage risks associated with the mineral wool sector.

All California fiber glass manufacturers have stated to CARB that products presently produced in California that are used in California or are shipped out of California could be supplied from fiber glass manufacturing plants located within the U.S., Canada, and Mexico. As the cost to produce the product in California goes up, the economies supplying the California market shift so that at some point it becomes more cost-efficient to do so than to continue to supply the California market from the California facilities.

Since California plants are the best performers, it provides yet another incentive for CARB to keep fiber glass plants operating in California. In fact, a production cost incentive to move more production to California facilities would have a positive impact on greenhouse gases and California jobs.

Chinese imports, which have proven to be inferior in performance capacity and substandard in materials content, also present a threat to California's fiber glass insulation market.

CARB's Position

Fiber glass insulation (mineral wool) has been given a medium level of allowances, which equates to 100 percent in 2012–2014; 75 percent in 2015–2017; and 50 percent in 2018–2020. The other two glass sectors (flat glass and glass packaging) received 100 percent allowances for all three compliance periods. CARB has justified that distinction based on its perception of the

effect of foreign competition on each segment of the glass industry. Prevention of leakage is how CARB intends to address the alternative supplier threat to California industry from the Cap-and-Trade Program and the inability of California to regulate those suppliers' greenhouse gas emissions.

CARB Has A Mandate To Minimize Leakage

AB 32 mandates that CARB minimize leakage "to the extent feasible." *See* California Health and Safety Code § 38562(B)(8). CARB's technical appendices on leakage and allowance allocation seem to focus on international leakage (relocation of industry from California to other countries). But the statutory definition of leakage is not restricted to the international context; rather, it includes any situation where "a reduction in GHG emissions within the state [] is offset by an increase in GHG emissions outside the state." Cal. Health & Safety Code 38505(J). The main body of CARB's "Initial Statement of Reasons" (or "ISOR") for the Cap-and-Trade Program defines leakage in similar terms: "If production shifts outside of California to a region not subject to GHG emissions-reduction requirements, emissions could remain unchanged or even increase."

There is no reasonable justification for CARB restricting leakage consideration to international leakage. There may be more data on international trade than on commerce between the states, but additional data is provided herein. During NAIMA's meeting, CARB acknowledged the limits of its analytical approach using only international leakage. In the context of trade exposure, for example, the Agency admits that its methodology "may not be sufficient to accurately quantify the degree of exposure to competition for many sectors." *See* ISOR App. K at page K-27.

CARB's seeming admission that there may be holes in its leakage analysis illustrates why NAIMA's additional information on leakage is so relevant. Indeed, CARB has appropriately recognized that it can be difficult to develop a one-size-fits-all approach to leakage analysis, and CARB expressed its willingness to accept any additional information and analysis NAIMA could provide. The information set forth herein should help CARB to more precisely meet AB 32's mandate to minimize leakage in this industry.

U.S. Domestic Insulation Production Presents Genuine Leakage Threat For California

CARB should recognize that if the California fiber glass operations are not economically viable as a result of AB 32, some of NAIMA's California members might close their plants or significantly reduce capacity. The fiber glass insulation production capacity in other jurisdictions will be able to adequately supply the California market, thereby increasing emissions in those jurisdictions. This fact is particularly relevant at the present moment because industry product resources are and will continue to be underutilized for many years due to current economic conditions and the downturn in the construction industry.

Any demand previously fulfilled by a California plant can be easily and economically supplied from other U.S. plants. This industry does not have to look to offshore facilities to supply the

California market. In addition to the increase in greenhouse gas emissions per ton of fiber glass insulation produced at these plants located outside California, the transportation needed to get that material to California markets would have a further negative impact on greenhouse gas emissions.

Aislantes Minerales, S.A. de C.V.
San Luis Potosí,Mexico

Amerrock Products, LP
Nolanville,TX

CertainTeed Corp.
Athens,GA
Chowchilla, CA
Kansas City,KS
Mountain Top, PA
Ottawa,Ontario
Redcliff,Alberta
Sherman,TX
Tilsonburg,Ontario

FiberTEK Insulation, LLC
Lakeland, FL
Nephi, UT

Fibrex Insulations Inc.
Sarnia,Ontario

Guardian Industries Corp.
Albion,MI
Erin,Ontario
Inwood,WV
Kingman,AZ
MineralWells,MS

Industrial Insulation Group, LLC
Phenix City,AL

Isolatek International
Huntington, IN
Stanhope,NJ
San Bernardino, CA
Houston,TX

Johns Manville
Berlin,NJ
Cleburne,TX
Defiance,OH
Defiance,OH
Innisfail,Alberta
McPherson,KS
Richmond, IN
Waterville,OH
Willows, CA
Winder,GA

Knauf Insulation
Lanett, AL
Shasta Lake, CA
Shelbyville, IN

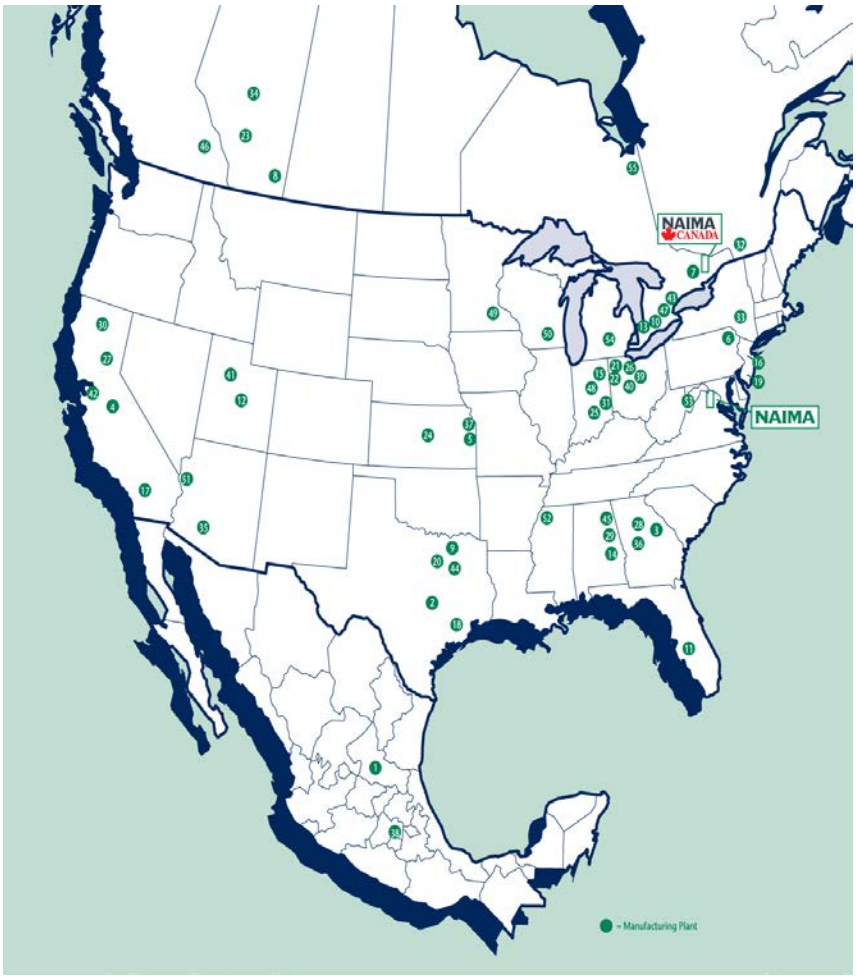
Owens Corning
Candiac,Quebec
Delmar, NY
Edmonton, Alberta
Eloy, AZ
Fairburn,GA
Kansas City,KS
Mexico City,Mexico
Mount Vernon,OH
Newark,OH
Salt Lake City, UT
Santa Clara, CA
Scarborough,Ontario
Waxahachie,TX

Rock Wool Manufacturing Co.
Leeds, AL

Roxul Inc.
Grand Forks, BC
Milton,Ontario

Thermafiber, Inc.
Wabash, IN

USG Interiors, Inc.
RedWing, MN
Walworth,WI



A close look at the map of currently operating fiber glass plants in North America effectively illustrates why fiber glass companies should be treated the same as the other segments of the glass industry and be given 100 percent allowances for all compliance periods through 2020. NAIMA points out two manufacturing plants right at California's border in Arizona. Two additional plants in Utah also could easily take up the work of supplying the California market. There are also four manufacturing plants in Western Canada.

The fiber glass insulation plants in the states bordering California are far more relevant to assessing the potential for leakage in this industry than 20 plants in Europe or 10 plants in Asia. If CARB is serious about preventing leakage from the State of California, it must carefully weigh the manufacturing potential, as illustrated on the above map of U.S. manufacturers. The

presence of those 40-plus plants are the most effective argument for giving fiber glass plants 100 percent allowances for all compliance periods through 2020.

The fiber glass industry in California does face some competition from plants in Canada and Mexico. There have been some efforts by Chinese manufacturers to supply the U.S. market. However, the insulation produced was inferior to U.S.-produced product, and to date, China has not caught on as a source of supply for the U.S. market. A reduction of production in California could prompt a renewed effort on the part of Chinese manufacturers to supply this market.

Fiber Glass Companies Can Cover Production In California Plants

NAIMA has analyzed the fiber glass industry's capacity to compensate for the closure of 1 or more of California's fiber glass insulation manufacturing plants. Such plant closures would be likely triggered by the serious deleterious impacts from CARB's implementation of the proposed Cap-and-Trade Program.

First, to effectively assess the ability of North American fiber glass and mineral wool insulation manufacturers to satisfy any gap in the production of fiber glass insulation created by the closure of California's plants, it is necessary to assess the current production of California manufacturing facilities.

The following chart identifies the number of production lines available at the California fiber glass facilities:

Company	**Plant Locations**	**Number of Lines**
CertainTeed	Chowchilla, CA	2
Johns Manville	Willows, CA	2
Knauf	Shasta Lake, CA	1
Owens Corning	Santa Clara, CA	2

The cumulative potential production capacity for the four California plants is 449,604 tons of fiber per year. The average utilization of this capacity in 2010 was 47 percent.

The CertainTeed, Johns Manville, Knauf, and Owens Corning facilities are producing residential and commercial insulation products that are used throughout the United States.

If any of the California plants were to close due to regulatory burden, fiber glass production facilities operating in the western part of North America could easily increase their production to serve the California Market. These plants currently produce residential and commercial insulation products that are equivalent to those manufactured at California plants; there is no reason why they would not be able to serve the California market. In addition, as the chart below demonstrates, these western U.S. producers have sufficient capacity to meet the demands of its current market plus anything west of its operation:

Company	Plant Locations	Number of Lines
CertainTeed	Redcliff, Alberta	1
Guardian	Kingman, AZ	1
Johns Manville	Innisfail, Alberta	3
Owens Corning	Eloy, AZ	1
Owens Corning	Nephi, UT	2
Owens Corning	Salt Lake City, UT	2
Owens Corning	Edmonton, Alberta	2
Roxul	Grand Forks, British Columbia	1

The cumulative potential production capacity of these western North American manufacturing plants is 332,801 tons of fiber per year. The average utilization of this capacity in 2010 was 54 percent.

Many of these western North American manufacturers are currently underutilized because of the building downturn; therefore, these plants have sufficient existing capacity to meet the increased demand occasioned by the closure of one or more California plants. In addition, consistent with the westward migration of products described above, any challenge to meet market demands from these western manufacturing facilities could be met by those manufacturing in the middle region of the United States and Mexico:

Company	Plant Locations	Number of Lines
Aislantes Minerales	San Luis Potosi, Mexico	1
Amerrock Products	Nolanville, TX	1
CertainTeed	Kansas City, KS	4
Guardian	Albion, MI	4
Guardian	Mineral Wells, MS	2
Johns Manville	Cleburne, TX	3
Johns Manville	McPherson, KS	2
Johns Manville	Richmond, IN	2
Knauf Insulation	Shelbyville, IN	6
Owens Corning	Kansas City, KS	3
Owens Corning	Mexico City, Mexico	1
Owens Corning	Waxahachie, TX	3
Thermafiber	Wabash, IN	2

The cumulative potential production capacity of these middle North American manufacturing plants is 1,304,137 tons of fiber per year. The average utilization of this capacity in 2010 was 57 percent.

As these charts demonstrate, the further east on the U.S. map, the greater the fiber glass insulation capacity. As illustrated above, the number of plants and the capacity of those plants

are significantly greater. These simple geographic facts demonstrate that the current manufacturing capacity within the United States can, with a slight shift westward, accommodate the market demands created by the closure of three of the four California plants.

To further illustrate this point and bring it home, consider the chart below that lists the eastern manufacturing plants that also have the ability to meet any market demands created by the closure of California plants and the demand placed on plants in closer proximity to the California market:

Company	**Plant Locations**	**Number of Lines**
CertainTeed	Athens, GA	3
CertainTeed	Mountain Top, PA	2
CertainTeed	Ottawa, Ontario	3
Guardian	Inwood, WV	2
Guardian	Winnsboro, SC	1
Industrial Insulation Group	Phenix City, AL	1
Johns Manville	Berlin, NJ	1
Johns Manville	Defiance, OH	13
Johns Manville	Winder, GA	2
Knauf Insulation	Lanett, AL	3
Owens Corning	Candiac, Quebec	2
Owens Corning	Delmar, NY	2
Owens Corning	Fairburn, GA	3
Owens Corning	Lakeland, FL	2
Owens Corning	Mount Vernon, OH	1
Owens Corning	Newark, OH	3
Owens Corning	Scarborough, Ontario	2
Rock Wool Manufacturing	Leeds, AL	1
Roxul	Milton, Ontario	2

The cumulative potential production capacity of these eastern North American plants is 1,705,758 tons of fiber per year. The average utilization of this capacity in 2010 was 49 percent.

The total cumulative capacity[3] for North America is 3,792,300 tons of fiber per year. The total utilization of this capacity in 2010 was 52 percent. The numbers speak for themselves, and it is plainly evident that any market gap caused by closure of California's plants could be quickly and easily satisfied by existing operations.

It is also worth noting that fiber glass insulation can readily be transported into California from other jurisdictions. Insulation can be shipped economically by truck or by rail (using intermodal

[3] Specific facilities that produce fibers for the production of ceiling tiles, fire proofing products, or specialized insulation production – for example, automotive, aerospace, and battery separators – are not included in this total capacity calculation. This capacity specifically relates to building insulation in residential, commercial, and industrial applications.

trailers). It does not require any special infrastructure, and there are no hard and fast limits on shipping distances. In fact, some manufacturers have in the past and currently do ship products to Australia and Europe.

The above series of charts tell a story of an industry and its ability to supply and meet the North American insulation market demands.

Over the last five years, the industry has witnessed a downturn in the building market, and, hence, a correlating downturn in its business. Since 2005, annual new housing starts have decreased by more than two-thirds. In fact, 2008, 2009, and 2010 represent the three lowest annual housing start totals since 1959 (the earliest year for which statistics are available on the United States Census Bureau website.

Year	New Housing Starts[4]
2005	2,068,200
2006	1,800,900
2007	1,355,000
2008	905,500
2009	554,000
2010	587,600

As a result, some of the fiber glass insulation plants identified above are operating on a reduced capacity; others have reduced the number of lines actually operating; and others have closed their doors and are waiting for a change in the market to resume manufacturing. All of these plants are eager to increase or return to full capacity, and are capable of doing so should market opportunities present themselves.

Domestic Leakage Must Be Addressed

Based on CARB's previous acknowledgement that its analysis of leakage risk for the fiber glass industry was limited because domestic market data was not utilized by CARB and, more importantly, CARB's statement to NAIMA that it would consider domestic data provided by NAIMA and use that data to reevaluate its leakage analysis, NAIMA prepared and presented in its February 16, 2011 letter to CARB and during the March 17 meeting with CARB, detailed capacity data for the entire fiber glass industry. This detailed data demonstrated that the U.S. fiber glass industry, as a whole, has the capacity to compensate for any closure of California plants.

Because CARB had previously invited this additional data and promised to consider it in calculating the Assistance Factor for allowances afforded the fiber glass industry, NAIMA was greatly disappointed and disheartened that CARB informed the industry for the first time at the March 17 meeting that the data provided by NAIMA could not be considered or calculated until

[4] www.census.gov/const/startsan.pdf.

after the implementation of the Cap-and-Trade Program. CARB has assured NAIMA that application of domestic data would occur sometime in 2012 and definitely before 2014.

Given the importance of this issue to NAIMA and as an indicator that CARB is in earnest about considering that data in a timely fashion, NAIMA requests that when allowances are assigned for the fiber glass industry that it convey this information relating to Assistance Factors:

2012 – 2014 – 100%
2015 – 2017 – To Be Determined
2018 – 2020 – To Be Determined

This information would be in place of what NAIMA understands is currently proposed:

2012 – 2014 – 100%
2015 – 2017 – 75%
2018 – 2020 – 50%

As an alternative, CARB could put 100% as a placeholder for the fiber glass industry for the second and third phases of the Cap-and-Trade Program.

Potential Environmental Impacts and Regulations

Finally, NAIMA notes that most of the out-of-state manufacturing facilities likely to increase production in response to plant closures (or manufacturing slowdowns) in California do not face any cap on greenhouse gas emissions. For example, the four out-of-state manufacturing facilities closest (in terms of distance) to California are located in Arizona and Utah, neither of which has proposed to limit (much less reduce) greenhouse gas emissions. Put simply, if insulation production were to shift from California facilities to out-of-state facilities (whether as a result of California plant closures or manufacturing slowdowns), any emissions reductions achieved in California would almost certainly be offset by emissions increases in other jurisdictions.

In fact, it is entirely possible that if insulation production were to shift from California facilities to out-of-state facilities, overall greenhouse gas emissions would actually increase. First, as noted above, the insulation products manufactured at California facilities tend to be of extremely high quality, and therefore provide more energy efficiency benefits to end users than do imported products from China. Second, California's manufacturing facilities are among the most energy-efficient production in the mineral wool sector. And third, the greenhouse gas emissions associated with transporting insulation products from out-of-state facilities to the California market would be extremely high (and, like the greenhouse gas emissions from out-of-state production, essentially unregulated).

INDIRECT EMISSIONS

While indirect emissions are not part of the Proposal, the preceding exhibits also point out that any plan which does not address the negative financial impact of indirect emissions for electrical

usage in the fiber glass industry will have the same negative impacts to California jobs and greenhouse gases.

OFFSETS

CARB recognized in the Scoping Plan that increasing the energy efficiency of existing buildings provides the "greatest potential for GHG reductions in the building sector."[5] CARB's Scoping Plan urges "adopting mechanisms to encourage and require retrofits for existing buildings that do not meet minimum standards of performance."[6] NAIMA urges CARB to broaden its scope of acceptable offsets. Energy efficiency offsets should be added to the list of acceptable/approved offsets. Insulation can be a key resource for combating climate change. Energy efficiency measures should be given top priority over renewable, where benefits tend to be uncertain, distant, and unpredictable.

AUCTIONS

Auctions are unknown and depend upon many variables. The unpredictability of auctions is not a positive point for conducting business in California. If an auction is instituted, the auction proceeds should go back into advancing energy efficiency.

ENVIRONMENTAL BENEFITS OF INSULATION

In balancing the need to protect and preserve California's economy with its environmental goals, it is equally important for CARB to weigh the significant environmental benefits offered by insulation products. Indeed, CARB recognizes that improving the energy efficiency of existing buildings can deliver the desired greenhouse gas reductions.[7] In testimony before the Subcommittee on Energy and Air Quality of the Committee on Energy and Commerce of the U.S. House of Representatives, William Fay, Executive Director of the Energy Efficient Codes Coalition, stated that "homes and commercial buildings are this nation's largest sector of energy use and – because of the close relationship between greenhouse gases and energy consumption –

[5] Scoping Plan, App. C, at C-146.
[6] Scoping Plan, App. C, at C-108.
[7] Insulation does indeed reduce pollutants emitted into the atmosphere. Jonathan I. Levy, Yurika Nishioka and John D. Spengler, "The public health benefits of insulation retrofits in existing housing in the United States," *Environmental Health: A Global Access Science Source*, April 2003, pp.1-16 and Yurika Nishioka, Jonathan I. Levy, Gregory A. Norris, Andrew Wilson, Patrick Hofstetter, and John D. Spengler, "Integrating Risk Assessment and Life Cycle Assessment: A Case Study of Insulation," *Risk Analysis*, Vol. 22, No. 5, 2002, pp. 1003-1017. NAIMA has summarized the findings of these two studies in previous comments which demonstrated the dramatic correlation between the benefits of increased insulation and reduction of air emissions. These Harvard researchers stated that the "magnitude of the economic and public health benefits indicates that creative public policies to encourage" increased insulation "may be warranted." Jonathan I. Levy, Yurika Nishioka and John D. Spengler, "The public health benefits of insulation retrofits in existing housing in the United States," *Environmental Health: A Global Access Science Source*, April 2003, p.14. The Harvard researchers concluded that "[t]his approach allows us to quantify the benefits of energy efficiency on a national scale not seen before, which takes us far beyond energy savings and energy security. Now it is clear that improving energy efficiency not only helps us as a nation, but also has an immediate, positive impact on us, as individuals, and our families." NAIMA "Harvard Study Findings," NAIMA-036, September 2003.

also the largest US source of anthropogenic greenhouse gases. Suffice it to say that buildings – and particularly residences – represent one of the last great frontiers of wasted energy."[8]

Since homes and commercial buildings consume nearly one half of California's energy, these structures must become an integral part of any successful effort to improve energy efficiency. The California Integrated Waste Management Board states that the residential sector (excluding commercial and industrial) accounts for approximately 31 percent of the electricity consumed in California.[9] The U.S. Department of Energy, along with various other government and third party organizations, put installation of insulation at the top or in the top five suggestions for energy savings. To understand why, consider the following attributes of insulation and it is easier to understand why this existing technology offers so many advantages.

Energy efficiency is a resource. Indeed, insulation products are resources. In fact, energy efficiency, including insulation, has been deemed the greatest untapped resource available to address the current energy crisis and climate change.[10] Unlike other energy efficiency measures, such as energy efficient appliances or energy saving light bulbs, insulation, once installed, requires no additional energy to save energy. NAIMA supports CARB's investigation of zero net energy targets for new buildings.[11]

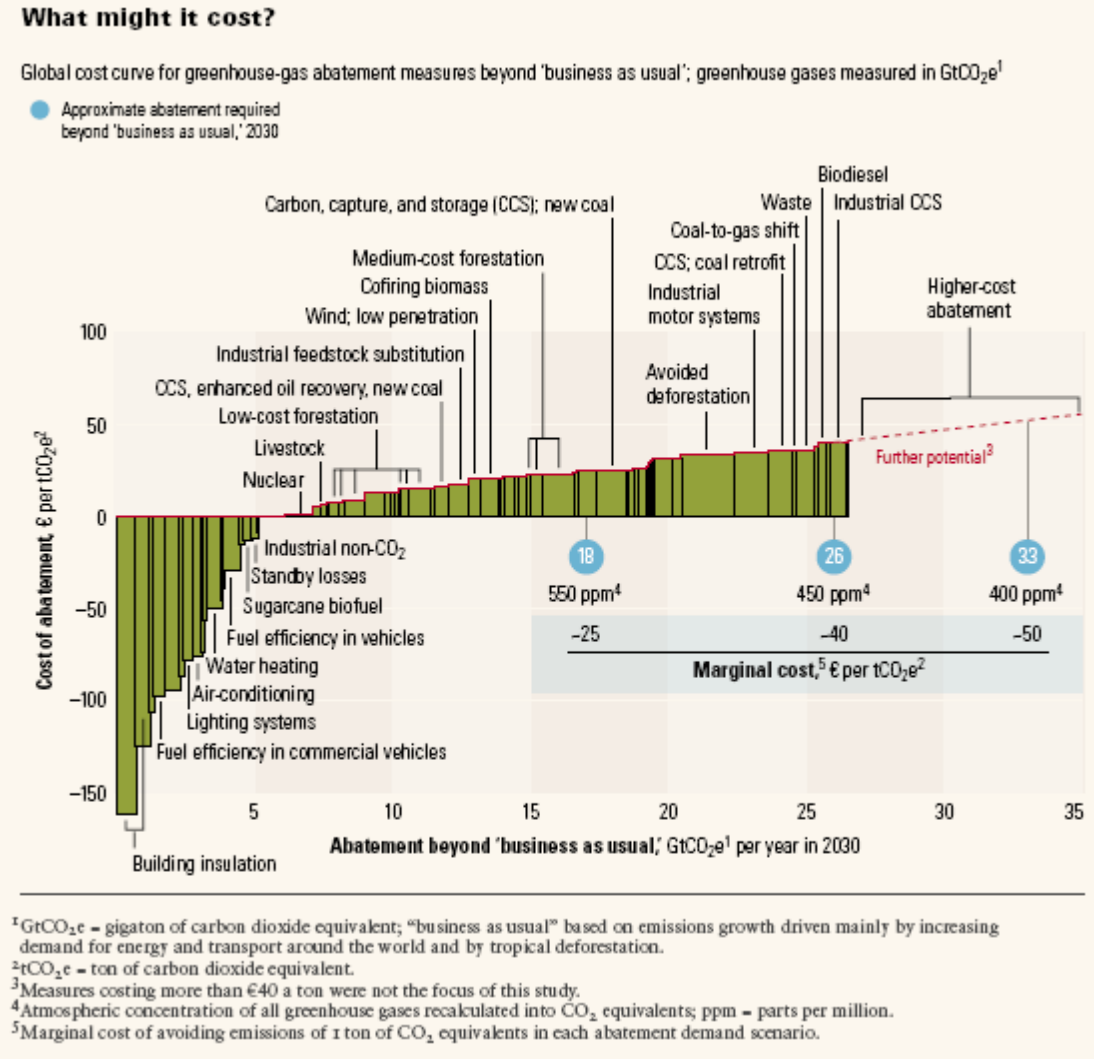
Therefore, increasing energy efficiency through insulation is cost effective. In *The Ecology of Commerce*, Paul Hawken asserts that "ceiling insulation and double glazed windows can produce more oil than the Arctic National Wildlife Refuge at it most optimistic projections; at about one-twentieth the cost, with four times the employment per unit of energy conserved versus the energy consumed by burning oil."[12]

The U.S. Environmental Protection Agency gives weight to cost effectiveness in identifying emissions reductions because a cost-effective measure does not present the usual impediments to implementation of an action plan.[13] Rather, cost-effective measures help meet goals and objectives expeditiously without overburdening budgets.[14] In focusing on the cost effectiveness of energy efficiency and specifically increased insulation, CARB should favor energy efficiency emissions reduction measures before expending valuable resources on the sometimes uncertain, unpredictable, and distant rewards identified in the "Renewables Portfolio Standard."[15]

In "A Cost Curve for Greenhouse Gas Reduction," the *McKinsey Quarterly* reports "that almost a quarter of possible emission reductions would result from measures (such as better insulation in

[8] Energy Efficient Codes Coalition, Testimony of William D. Fay Before the Subcommittee on Energy and Air Quality of the Committee on Energy and Commerce, U.S. House of Representatives, Thursday, July 17, 2008.
[9] www.ciwmb.ca.gov/GreenBuilding/Residential.
[10] "Transforming Energy Efficiency." www.duke-energy.com/docs/CGI - Fact-Sheet.doc, September 27, 2007.
[11] Scoping Plan at p. 38.
[12] Paul Hawken, *The Ecology of Commerce* (New York: Harper Business, 1993), p. 178.
[13] 70 Fed. Reg. 65,983, 66,007, 66,019, 66,020-24, 66,049, 66056, and 66059.
[14] *Ibid*. at 66,006.
[15] Scoping Plan at p. 24.

buildings) that carry no net life cycle cost – in effect they come free of charge.[16] As the graphic from the above-referenced article demonstrates, no other efficiency measure is as cost effective as building insulation.



[1] $GtCO_2e$ = gigaton of carbon dioxide equivalent; "business as usual" based on emissions growth driven mainly by increasing demand for energy and transport around the world and by tropical deforestation.
[2] tCO_2e = ton of carbon dioxide equivalent.
[3] Measures costing more than €40 a ton were not the focus of this study.
[4] Atmospheric concentration of all greenhouse gases recalculated into CO_2 equivalents; ppm = parts per million.
[5] Marginal cost of avoiding emissions of 1 ton of CO_2 equivalents in each abatement demand scenario.

From a pragmatic perspective, insulation is easily installed and the materials are immediately available. As evidenced by the McKinsey report cited above, insulation delivers significant reduction in pollutants, specifically greenhouse gases. Therefore, it is imperative for California to protect the insulation industry in the State of California; it not only provides significant economic benefits to the State of California, but it helps CARB meet its goal to reduce greenhouse gas emissions through increased energy efficiency.

[16] Enkvist, Per-Anders, Tomas Nauclér and Jerker Rosander. 2007. "A Cost Curve for Greenhouse Gas Reduction." *The McKinsey Quarterly* 1: 38.