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October 31, 2011

Via federal express delivery (ten copies) to:
California Energy Commission
Dockets Office
MS-4
Re: Docket No. 10-BSTD-01
1516 Ninth Street
Sacramento, CA
95814-5512

Re: Docket number 10-BSTD-01
October 13-13, 2011 Staff Workshop – 2013 Building Energy Efficiency Standards

Dear Docket Clerk:

Enclosed please find ten copies of the comments of Pilkington North America, Inc. and AGC Flat Glass North America, Inc. concerning the September 2011 CASE Report for Non-Residential & High-Rise Residential Fenestration Requirements as presented at the October 13, 2011 staff workshop. These comments were delivered via email to docket@energy.state.ca.us on October 31, 2011.

Thank you for your time and attention,

Thomas S. Zaremba

TSZ/mlw
Enclosures

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October 31, 2011

Re: Docket number 10-BSTD-01
October 13-14, 2011 Staff Workshop – 2013 Building Energy Efficiency Standards

Via email to:
docket@energy.state.ca.us

Via federal express delivery (ten copies) to:
California Energy Commission
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MS-4
Re: Docket No. 10-BSTD-01
1516 Ninth Street
Sacramento, CA
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Commissioner Douglas and Ladies and Gentlemen
of the California Energy Commission and Staff:

Pilkington North America, Inc. ("PNA") and AGC Flat Glass North America, Inc. ("AGC"), two of North America's leading primary flat glass manufacturers, respectfully submit the following comments on the draft proposals set forth in the September 2011 CASE Report for Nonresidential & High-Rise Residential Fenestration Requirements presented at the October 13, 2011 staff workshop ("CASE Report II" or "Report"). CASE Report II only proposes minor changes from the original CASE Report presented at the June 2011 Staff Workshop ("CASE Report I").[1]

I. Both CASE Report I and II Use the Same Proprietary Product as the Basis for Virtually All of the Changes They Propose.

Except for minor modifications made in response to stakeholder comments, there are no significant changes between CASE Report I and CASE Report II. What does ***not*** change is that:

> *CASE Report II carries forward the decision its Author made in CASE Report I to use a single fenestration product (sputter coated triple-silver*

[1] The minor changes made to the proposals set out in CASE Report II do not resolve the comments PNA and AGC submitted in response to CASE Report I following the June 2011 Workshop. Those comments will not be reiterated here.

> *low-e) as the basis for the same prescriptive criteria changes (VT, U-factor and SHGC) that CASE Report II carries forward into all 16 climate zones found in California.*

Indeed, the Report is quite straightforward in pointing out that it uses a **proprietary** product as the basis for most of its proposed changes:

> Triple-silver coated glazing which forms the basis for most of the updates to the Standard, is proprietary to Cardinal, PPG and Guardian...."

(CASE Report II, p. 12).

II. Prescribing Proprietary Products Inevitably Leads to Unwarranted Monopolistic Price Increases.

CASE Report II claims that "double-pane triple-silver low-e coated glazing was the most cost-effective choice for a statewide fenestration standard."[2] In drawing this conclusion, the Report uses "the cost of fenestration to the owner" as the basis for its analysis.[3] However, what the Report fails to take into account is the very real impact that antitrust concerns and the law of supply and demand will have if its proposal, that a proprietary product be adopted as the basis for the prescriptive regulatory criteria throughout all of California, is, in fact, adopted.

One of the most obvious effects that prescriptive building codes have is a rather immediate increase in the "demand" for the products they prescribe. Unless multiple products are eligible to comply with the prescriptive requirements of a building code, the demand for prescribed products will increase quickly.

The law of supply and demand dictates that increasing demand will result in increased prices ***unless*** that increased demand is offset by a commensurate increase in supply. An increase in supply is usually achieved by establishing a criteria that permits many different products to compete for compliance in the marketplace. CASE Report II takes an opposite approach. Instead of proposing a criteria that permits many different products to comply, it bases its prescriptive proposals on a single, proprietary product.

CASE Report II deliberately sets out to create a prescriptive monopoly in favor of a single product. It does so on the wholly insufficient basis of "simplifying the current code."[4] Although monopolies are, by definition, simple because they grant exclusive rights to a single product or entity, they are inappropriate in building or energy codes.

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[2] CASE Report II, p. 33.
[3] CASE Report II, p. 18.
[4] CASE Report II, p. 21.

In drawing its conclusion that a triple-silver low-e coated glazing is the most "cost-effective" choice for a "statewide fenestration standard," CASE Report II completely fails to take into account the monopolistic effect and resulting price increases that are virtually certain to follow if Title 24 adopts a criteria that prescribes the "statewide" use of a proprietary glazing. This is true because:

1- The unitary, statewide criteria proposed by CASE Report II will render approximately 95% of the glazing products currently available in the marketplace ineligible to comply with its prescriptive criteria;

2. The fact that CASE Report II targets a statewide criteria designed for a single fenestration product that is ***proprietary*** to only a few manufacturers will stifle, if not eliminate, competition and any otherwise anticipated increases in supply from other manufacturers.

3- CASE Report II puts forward no proposal of any kind aimed at mitigating or eliminating the obvious monopolistic price increases and other adverse effects that can reasonably be anticipated from the adoption of a prescriptive regulation that favors a single, propriety product statewide, especially in a State as vast as California. (As set out in greater detail below, obvious antitrust concerns and the inevitability of price increases resulting from prescriptive provisions requiring proprietary products have lead responsible code development bodies either to ***prohibit*** standards that require the use of a proprietary product or to impose strict conditions and limitations on those benefitting from the resulting monopolies).

Antitrust considerations aside, because the adoption of the regulations proposed in CASE Report II will almost certainly result in significant price increases that are not anticipated or addressed in the Report, its conclusion that "double-pane triple-silver low-e coated glazing" is a "cost-effective choice for a statewide fenestration standard" is, at best, highly suspect. At worst, it is, simply, wrong.

1. CASE Report II Eliminates Approximately 95% of the Glazing Products Available in the Marketplace From Compliance with its Prescriptive Requirements.

I encourage Commissioner Douglas and the other members of the California Energy Commissioners and Staff to look carefully at the Appendix to these comments. It is taken directly from Figure 7-10, page 74, of Case Report II. The graph that appears as Figure 7-10 of the Report was prepared by the Report's Author ("Author"). It is the result of the Author's survey of the glazing product inventories of the 6 major manufacturers' of architectural glass.[5] It

[5] The five primary manufacturers of architectural glass in the United States are: PNA, AGC, Guardian, PPG, and Cardinal. It is believed that the Author of the Report has counted Viracon as a 6th manufacturer.

correlates visible light transmission (VT) with the Solar Heat Gain Coefficient (SHGC) of the products in those inventories.

The graph in the Appendix is identical to Figure 7-10 in the Report, except that it adds (i) the vertical red line (ii) the horizontal red line (iii) the words "Products that Comply" and (iv) the words "Products that Do not Comply." The vertical and horizontal red lines on the graph separate the products that comply with the prescriptive criteria proposed in the Report from those that are disqualified from compliance by the prescriptive criteria proposed in the Report.

The dots within the red box in the upper left hand side of the Appendix are marked "Products that Comply" because they represent the only 15 glazing products that do comply with the VT and SHGC criteria proposed in the Report. All of the other dots on the graph represent products that do not qualify or meet the VT and the SHGC criteria proposed in the Report. The 317 dots in the area marked "Products that do not comply" represent the 317 products that do not comply with the VT and SHGC criteria proposed in the Report, although they are currently available in the marketplace.

If adopted, CASE Report II would eliminate 302 of 317 products that are available in the market but that do not comply with the prescriptive criteria proposed in the Report. This means that, in an effort to "simplify" its code, California would exclude 95.3% of all products from competing for compliance with the prescriptive provisions of its energy code. Whether intended or not, adopting the Report's proposed criteria would create a prescriptive monopoly in California consisting of only 4.7% of the glazing products currently available in the market.

Energy codes typically attempt to lead the market toward energy efficient products and the California energy code has been one of those leaders. However, leading or moving the market typically means dropping the lowest performing products that would otherwise be available. CASE Report II doesn't just cut off the lowest performing products or those on the dog's tail; instead, it proposes cutting off 95.3% of all products otherwise available in the market from complying with its proposed criteria, in effect, cutting off everything below the dog's nose.

2. CASE Report II Provides Misleading Data Concerning the Availability of Products in the Marketplace to Compete with the Monopoly it Proposes to Create in Favor of a Proprietary Product.

While CASE Report II proposes to create a monopoly in favor of a proprietary product, the Report goes on to list a "sample of fenestration" that the Report **claims** "can meet the nonresidential fixed window requirements of the proposed update."[6] While the Report clearly suggests that these and many other products are available in the marketplace to compete for compliance with the criteria it proposes, what the Report does **not** say is that the products listed

[6] CASE Report II, Fig. 4-14.

in Figure 4-14 of the Report are **not** even comparable by virtue of the types of products that are listed and their cost.

Of the 73 products listed in Figure 4-14 in the Report, a full 56 (or 76.7%) of them, are a totally different configuration than the configuration the Report has selected as the basis for its proposals. In that regard, 76.7% of the windows listed in Figure 4-14 are **triple** pane window units. This is significant because the product forming the basis of the changes proposed in the Report is a **double** pane window unit.

Attempting to compare **double** pane window configurations as somehow comparable to **triple** pane configurations is like trying to compare apples to oranges. They are, simply, not comparable. In that regard, the Report itself provides the "cost premium" that would have to be paid for choosing any of the **triple** pane units from Figure 4-14 over the **double** pane unit that the Report uses as the basis for its proposed changes. According to the Report, a **double** pane product costs $3.83/sq. ft. whereas a **triple** pane product costs $11.18/sq.ft.[7] This means that a purchaser choosing one of the 56 **triple** pane units from Figure 4-14 of the Report would have to pay at least a **$7.35/sq.ft. premium** over the price of the **double** pane proprietary product forming the basis of the changes proposed in the Report.[8]

In short, while the Report represents the products listed in Figure 4-14 as if they are available alternatives that will somehow compete with the proprietary product the Report uses as the basis for its proposed changes, the Report **fails** to mention that the product configurations listed in Figure 4-14 are **not comparable** and that they are from $4.24/sq.ft. to $16.69/sq.ft. higher in price. Also, while the Report claims that a single configuration (triple silver coated low-e on a clear substrate) is cost effective, it is relying on product availability from other, more expensive configurations that are nowhere evaluated in the Report for cost effectiveness.

3. CASE Report II Does Nothing to Anticipate or Mitigate the Monopoly and Resulting Price Increases That Can Be Expected from Prescribing a Proprietary Product Statewide.

The International Code Council ("ICC") is one of the leading building and energy code developers in the country. It outright **prohibits** standards from establishing criteria that requires use of proprietary products. In that regard, §3.6.2.5 of ICC Policy # 28-5 clearly provides that for a standard to be referenced in an International Code, the standard "***shall not*** have the effect of requiring proprietary materials." (Emphasis added.)

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[7] CASE Report II, Figure 4-1, pp. 24-25.

[8] Of the 73 configurations listed in Figure 4-14 of the Report, 56 are triple pane configurations. The remaining 17 configurations are double pane; however, all of them coat at least two separate glass surfaces, whereas, the product forming the basis of proposed change in the Report coats only a single glass surface. Coating multiple glass surfaces in any double window configuration carries a price premium over the price of coating a single surface. The higher prices of the configurations set out in Figure 4-14 are not disclosed or mentioned anywhere in the Report.

The reasons for this prohibition are numerous and obvious: Setting standards based on proprietary products 1- creates a monopoly; 2- reduces competition in the marketplace; 3- invites antitrust scrutiny, if not litigation; and 4- results in rapidly rising prices, making it impossible to accurately assess cost effectiveness.

Likewise, before proprietary products can be used in a standard endorsed by the American National Standards Institute ("ANSI"), the proprietary character of the product must be disclosed and the owner must provide ANSI with assurances that licenses for the proprietary product will be made available "without compensation to applicants desiring to utilize the license for the purpose of implementing the standard, or that a license will be made available to applicants under reasonable terms and conditions that are demonstrably free of any unfair discrimination."[9]

The CASE Report ignores the multitude of issues and inevitable price increases that will follow from its monopolistic proposals if they are adopted.[10] Instead of addressing the issues raised by its proposal to adopt proprietary products as the basis for its proposed criteria, the Report attempts to conceal the existence of these issues behind a listing of products that it claims will be available to compete for compliance with its criteria, when, in reality, the listed products are **not** comparable either in configuration or price and could potentially add hundreds of thousands of dollars to building costs.[11]

III. CASE Report II Violates Fundamental Rules of Building Code Development Resulting in an Exaggerated Prediction of Energy Savings From Its proposed VT Criteria.

It is axiomatic that in drafting building codes (including energy codes), if the operation of a device or assembly is not automatic, it cannot be counted in assessing building or energy performance. The reason is simple: If human intervention is required, the operation of the device or assembly may or may not occur when needed, which means that the building or energy performance may or may not be realized.

A good example of this is found in § 1025.3 **of the International Building Code. That section provides that "**fire doors in horizontal exits **shall** be self-closing or automatic-closing when activated by a smoke detector...." (Emphasis added.) This means that installing a fire door in a horizontal exit that is **not** self-closing does **not** count in assessing code compliance or building performance. The reason is, simply, if human intervention is required to close the fire door, it may or may not close when needed to safeguard the exit from fire.

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[9] Rule 1.2.11.1 ANSI Rules for the Development and Coordination of American National Standards.

[10] Rather than disclosing and addressing the problems that its monopoly proposals will create, at the October Workshop where his Report was presented, its Author openly acknowledged the "support" that one of the manufacturers of the proprietary product forming the basis of the Report had provided to him.

[11] CASE Report II provides no information as to whether any of the product configurations listed in Figure 4-14 are cost effective.

Assessing the energy performance of a building is no different. For example, if the energy performance of a building is dependent on opening or re-opening shades on windows, unless the shades open automatically, their re-opening cannot be counted in assessing the building's energy performance. The reason is the same as in the fire door example above. If human intervention is required to open the window shades, they may be open or closed at the wrong times and yield no energy savings. Indeed, the human intervention required to open or close them may actually defeat other energy savings measures, like automatic lighting controls. In any event, unless the shading devices open automatically to achieve a desired energy saving effect, credit cannot be taken for the energy savings attributable to their opening.

At the October Workshop, it was revealed that CASE Report II projected energy savings using a computer program that assumes that window shades are closed when a certain glare within the building occurs and that the window shades reopen when the glare condition is past. While the CASE Report takes credit for the re-opening of the window shades, it does not propose requiring automatic window shades. As a result, the CASE Report violates a fundamental rule in assessing energy performance and exaggerates the amount of energy savings that will be achieved as a result of adding its proposed VT requirement.

IV. Prescribing an Ultra- Low SHGC Statewide on the Basis of a Proprietary Product Will Result in Burning More Fossil Fuels in Heating Dominated Climate Zones.

In response to CASE Report I, PNA and AGC proposed a minimum 0.40 SHGC in climate zones 14 and 16 to take advantage of renewable solar energy and reduce the burning of fossil fuels needed for heat in these heating dominated climate zones. This comment was not adopted in CASE Report II.

There can be little doubt that burning fossil fuels for heat will be reduced with a higher SHGC glass. Additionally, natural gas prices are likely low due to increased supply on account of the use of fracking technology. Fracking means that a vertical well is drilled into a shale formation and then drilled sideways at the bottom. Millions of gallons of water, sand and chemicals are then pumped into the L-shaped well to fracture the shale which releases natural gas deposits locked in the formation. Afterward, the well experiences flowback of 15-20% of the water which is usually further contaminated with barium and sulfur as well as other suspended solids, soluble salts and even small amounts of radium which can impact water quality. Likewise, some concern is now being expressed as to contamination of underground water supplies by the water and chemicals that remain in the ground after the shale releases its natural gas deposits.

The CASE Report leaves a significant amount of energy on the table by failing to recognize the value of higher SHGC values in heating dominated California climates. Because the Report proposes to use an ultra-low SHGC in the northern, heating dominated climates, those climate zones will burn more natural gas than would be required if higher SHGCs were

prescribed. Moreover, the Environmental Impact portion of the Report[12] ignores fracking and erroneously represents that there is "No Change" in any environmental impact.

Conclusion and Recommendations

A one-size fits all U-factor, SHGC and VT criteria for fenestration is simple but unlikely to achieve desired energy saving objectives[13]. Worse, the one size fits all criteria selected by the CASE Reports as the basis of most of the proposed changes is proprietary. Proprietary products converted to monopolies by prescriptive codes cannot reliably be evaluated for cost effectiveness since establishing them as a monopoly will very likely result in quickly rising prices. Simplification does not provide an adequate justification, technical or otherwise, to elevate a proprietary product to a prescriptive monopoly in California.

Recommendations

PNA and AGC again urge the California Energy Commission:

1- Not to adopt the VT proposals contained in the CASE Report.

Instead, PNA and AGC urge the California Energy Commission to:

2- Continue pursuit of effective daylighting requirements in the performance path;

- alternatively -

3- Use Effective Aperture in the prescriptive path, possibly coupled with a requirement that registered design professionals certify compliance at the time plans and drawings are submitted for approval;

- or -

4- Use the prescriptive daylighting formula developed by NBI/AIA found in the 2012 edition of the IECC;

- and -

5- Rather than adopting the ultra low SHGC values proposed Statewide in the CASE Report (i) prescribe a minimum 0.40 SHGC in California's climate zones

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[12] CASE Report, 2f, p. 11.

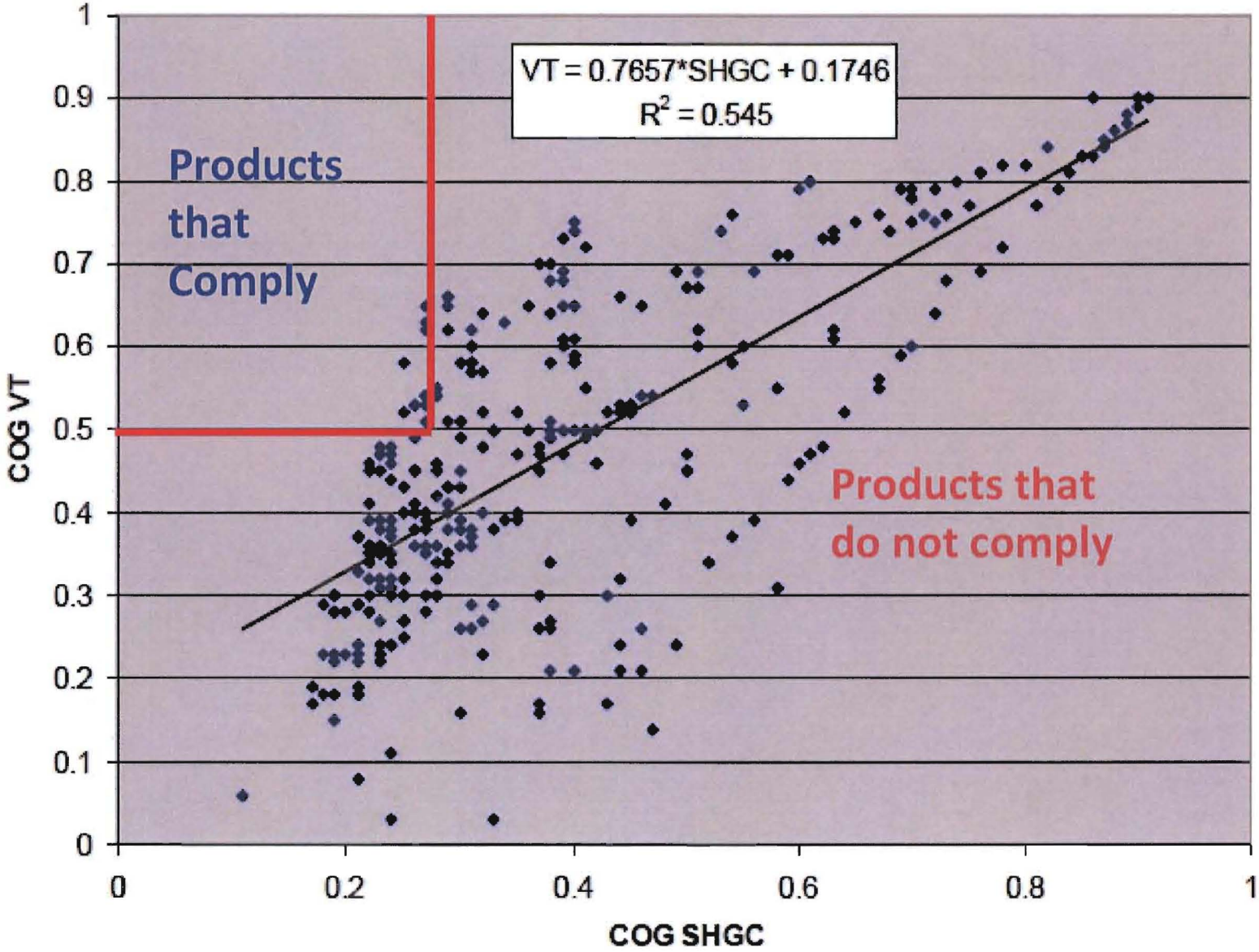
[13] See. Viracon's assessment of a one-size fits all VT by viewing its video at:
http://www.youtube.com/watch?feature=player_embedded&v=o1K-jslhHOo#at=12

14 and 16 and (ii) study the use of higher SHGC values in higher elevations and different building orientations for potential energy savings.

Thank you for your time and attention,

Thomas S. Zaremba

Center of Glass (COG) VT vs SHGC



Note: exact boundaries depend on window type and frame width