GANA: Energy: A Crisis, Challenge, and Opportunity for the Flat Glass Industry

I. Introduction of speaker: GANA Executive Vice President, Bill Yanek

II. The Elements of GANA: Energy

A. GANA Energy Committee

B. GANA Division Operations

C. GANA: Events

III. Crisis: How Does Energy Impact the Glass Industry?

A. Do you believe in the church of Al Gore? Is Global Warming really happening? Or (like me) have you been shivering through this winter wondering whether another ice age is upon us. Do you now call global warming – "global climate change".

B. Fire and Ice: Journalists have warned of climate change for 100 years, but can't decide whether we face an ice age or warming.

C. It doesn't matter. Whether the weather is warming, cooling, or just changing, the glass industry (actually manufacturing as a whole) will be in the crosshairs of regulators for the foreseeable future. We must – and will – act to protect our industry, our jobs, and the country's manufacturing base.

IV. The Regulators are Coming.

A. Who are the regulators: an introduction to the Obama Administration energy team.

B. Energy and the glass industry: what will regulators see when they examine glass and energy?

(1) The commercial building sector of the economy contributes up to 40% of GHG emissions.

(2) "Making America the world's greenest country is not a selfless act of charity or naïve moral indulgence. It is now a core national security and economic interest." Thomas Friedman in his book: Hot, Flat, and Crowded

(3) Individual states such as California are already regulating GHG at the state level.

C. The regulators have ammunition to force energy related regulation on the glass industry.

(1) Consumption of all forms of energy will at least double between now and 2050.

(2) Detroit is betting its future on Washington DC.

(3) “Fuels from hell” are being pitted against “fuels from heaven”.

D. Regulators must pay attention to the glass industry: environmental issues and the flat glass industry

(1) The flat glass industry is energy intensive. It takes 6-7,000 cu. ft. of natural gas to produce one ton of flat glass. Approximately 5.7 million tons of flat glass will be produced in the United States in 2008 – implying industry-wide consumption of 34-40 billion cu. ft. of natural gas. The industry also uses nearly 2 billion kWh of electricity annually.

(2) The industry carefully monitors greenhouse gas emissions. Using best available technology, about 1000 pounds of CO_2 equivalent is emitted for each ton of flat glass produced. This implies industry-wide emissions of 2.8 million tons in the U.S. in 2008.

(3) Due largely to advances in furnace design, energy efficiency has increased 66% since the 1970’s. This improvement, combined with many pollution control measures has contributed to a 54% reduction in CO2 emissions. Despite these recent improvements in reducing emissions, the technology to make dramatic further improvements is not on the horizon.

(4) The industry is approaching theoretical limits of efficiency and significant further efficiency gains are not on the horizon. However, the industry is exploring heat recovery as a means to improve overall furnace efficiencies. Heat recovery systems, which utilize process heat for steam and power generation, make it possible to generate some of the electrical power required for glass production from the waste process heat.

(5) Climate change legislation should recognize the role glass plays in promoting energy efficiency and enabling the solar energy industry.

V. Challenge: Energy conservation advocates, some engineers, and some architects are circling the glazing industry floating the argument that less glass = more energy savings and “greener” buildings. Less glass is bad for our industry and the environment. If we don’t tell the glass story, who will?

A. In his article “Why Green Can Be Wash” (ASHRAE Journal, November 2008), Dr. Joseph W. Lstiburek, an ASRAE fellow, put the challenge this way: “Many ‘green’ buildings don’t save energy. Why? They have too much glass…” Lstiburek goes on to state: “Do you want to save serious energy and serious money? That’s easy. Use less glass.”

B. The glass industry must make the case for more glass.

C. Flat glass is critical to achieving greater energy efficiency in buildings and automobiles. Low emissivity coatings on architectural glass keep heat inside buildings in the winter and reflect solar heat in the summer, dramatically reducing both heating and cooling costs (and related greenhouse gas emissions). Coatings also reduce glare to allow maximum daylighting, cutting the need for energy used for interior lighting. Coated auto glass reduces solar heat build-up, making possible a smaller air conditioning unit, reduced engine strain and increased fuel efficiency. Double-paned insulating glass units more than double the thermal efficiency of windows.

VI: Opportunity: Federal funding and incentives for alternative energy are growing. Solar energy will benefit from this growth, but currently the interaction between the solar and a glass industry is disjointed.

A. “When the wind changes direction, there are those who build walls and those who build windmills.”

B. Flat glass and the solar power industry. Low-iron flat glass provides a critical top cover for photovoltaic solar collectors. The concentrated solar power (CSP) industry relies on large parabolic mirrors made from flat glass.

C. BIPV: Solar technology integrated into the building envelope is poised to be the most disruptive of all renewable power options. Retrofit rooftop applications, currently the majority of PV systems, have barely scratched the surface of solar’s full potential. New low-cost thin film products will transform traditional building surfaces into reliable, distributed generation, power plants. In some market energy efficiency and building integrated photovoltaic’s (BIPV) have already combined to make the first generation of Net-Zero Buildings a commercial reality.

VII. GANA: Energy 2.0: What to watch for in 2009 and beyond.