THE GLASS ART SOCIETY

2009

CORNING, NEW YORK

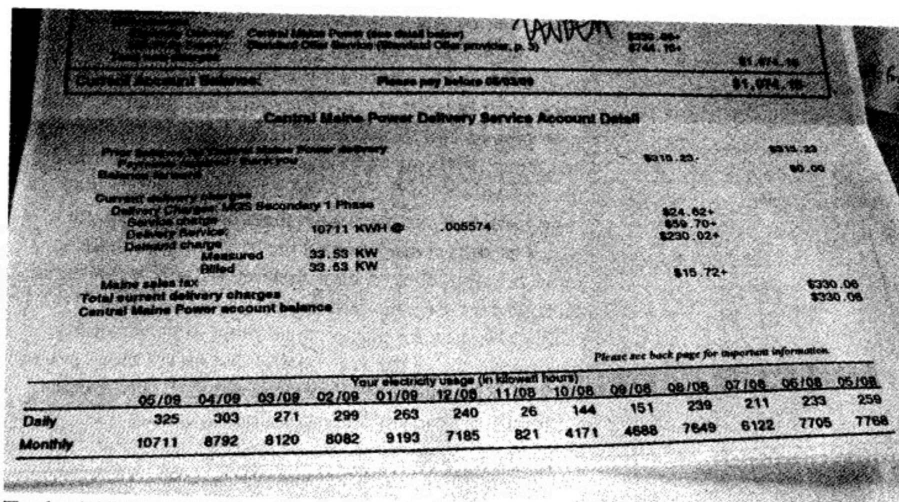
MODERATOR: EDDIE BERNARD

PANELISTS: TERRILL WALDMAN AND PABLO SOTO

Energy and Atmosphere

Eddie Bernard

This panel discussion is a sequel to what has become a series at the GAS conferences. It's based on energy and resource conservation in glass studios, and acknowledges that both the terms *energy* and *atmosphere* have multiple meanings. While we make the effort to reduce energy consumed in our studios, we must also use our own energy to research, implement, and share findings. As we attempt to reduce our impact on the planet's atmosphere, we often come across barriers and/or incentives in economic and political spheres. Sometimes there are tradeoffs in terms of energy savings that result in atmospheric harm, for example the excessively preheated air used in a burner that's not specifically designed for low nitrous oxide emissions. Likewise, some alternative fuels tend to promote more N_2O creation than others.



Central Maine Power Delivery Service Account Detail

Delivery Charges: MGS Secondary 1 Phase

10711 KWH @ .005574

Measured 33.53 KW

Billed 33.53 KW

Total current delivery charges $330.06

Central Maine Power account balance $330.06

Please see back page for important information.

Your electricity usage (in kilowatt hours)

	05/09	04/09	03/09	02/09	01/09	12/08	11/08	10/08	09/08	08/08	07/08	06/08	05/08
Daily	325	303	271	299	263	240	26	144	151	239	211	233	259
Monthly	10711	8792	8120	8082	9193	7185	821	4171	4688	7649	6122	7705	7768

The electric bill for Tandem Glass with a provider who offers a higher percentage of renewable power in their portfolio

Together we are steering a big ship, *the glass arts*, and it's an energy intensive ship that needs to be directed on a course toward higher efficiency. Altering the ship's course requires a continual effort towards greater effectiveness in the equipment we use, smart designs for studio facilities, a focus on efficiency in university programs, better product design, improved use of waste heat and products of combustion, higher skill levels, solid working habits, and more fully developed community access glass facilities. Anyone is welcome to participate in this dialogue, including the upcoming GAS conferences.

The previous episodes have been entitled: "Fueling the Habit," "BioGlass," and "Energy Sources." From past discussions, we learned about the use of methane landfill gas, waste vegetable oil, and talked about wood-fired and hydroelectric-powered electric furnaces. The presentations have included studios using only recycled glass, from a shop in Mexico that created a community recycling situation to obtain glass and materials, to a resort island's studio that, as a matter of necessity, developed glass and craft programs to reduce their overall shipping expenses, pollution, and energy consumption. Poverty, remoteness, and scarcity of resources are all incentives for conservation. Our glass arts mother-ship appears to be approaching the shores of those incentives.

This year, Terrill Waldman and Pablo Soto, established glass designers and makers whose work has not suffered from focusing on conservation, shared their insights with an audience of approximately 90 people. Pablo Soto's studio is well thought out. The natural lighting and ventilation keeps the space pleasant, quiet, and affordable while recuperation systems on his furnace and glory hole reduce exhausted heat as well as fuel expenses. He feels that the most important aspect of all the equipment is that the doors seal tightly. His garage/pipewarmer combo has modular doors that can completely close the openings down. A diverter above the flue of the furnace directs the 1100°F flue gases in the winter to the underside of a small water tank to warm his wife's studio via a hydronic radiant floor. Pablo noted that this involves a constant watch over the tuning of air-to-gas ratios when using his equipment. Without temperature or atmospheric controls, he manages all adjustments himself, a testament to the individual dedication it might take to reduce environmental impact. *Doors can seal tightly, but someone has to close them.*

Terrill Waldman and her husband Charlie operate a studio they named Tandem Glass. They run an electric furnace and gas-fired glory holes. The glory holes are used most days and the waste heat becomes a heating source for the couple's apartment above the studio.

Because little heat is lost from their electric furnace, they attack waste from another angle, through an educated understanding of their electric bill. They have not sought the most affordable electric service, rather, Terrill decided to go with the provider who offered a higher percentage of renewable power in their portfolio. This exemplifies the sort of economic and political atmospheres (and decisions) in

which we must forge ahead as individuals, and in directions we feel are most appropriate. She acknowledges this approach is more attractive to her even if it costs a few cents more. If she switched to a commercial electric account, the electric bills would likely decrease, but she would not have the option of purchasing renewably generated electricity. The electric bill for Tandem Glass shows that in addition to the energy charge (of $744), there is a "demand charge" of approximately $230. The demand charge is a fee based on a calculation for the most power used in any 15 minute interval in the current month or any of the previous eleven months. It is derived from the notion that the generating plant must be able to supply the amount of power a customer needs at any given moment, which requires that the plant run at a higher rate than generally necessary in the off-chance that the customer will need the higher level of demand within the following twelve months.

At Tandem Glass, they use an imported glass batch that Terrill claims melts at 100°F colder than what she previously used and thereby requires less energy to melt. Pablo uses a batch made in his hometown and so keeps things local and the transportation (carbon footprint) down. He also noted that he was able to fabricate his furnace, glory hole, garage, and annealing oven for under $10,000 by scrounging in scrap yards for materials. Of course, the costs of temperature control and safety systems are not included in this figure.

The glass arts are an industry built by artists, educators, material and equipment vendors, enthusiasts, and collectors. The survival of this industry hinges upon artists using glass as a medium. This entails affordability of raw materials and energy, and that entails responsible consumption and reuse of resources wherever possible. We are the players in this field. We are those who can make the change. Terrill and Pablo have chosen to hold conservation as a key factor in their lifestyles as well as their businesses.

The discussion following the presentations was punctuated by a healthy level of audience participation, with questions, comments, and information. Fritz Dreisbach recalled a trip 25 years earlier to visit Sybren Valkema, a furnace-builder and leader in the Studio Glass movement in The Netherlands. Ingeniously, Valkema not only used the furnace exhaust to preheat its own combustion air, but the remaining heat was used to supplement the annealing oven's process. In addition, the leftover heat from the annealing process was used to heat the studio's gallery, and the residual heat from the gallery kept a small greenhouse warm enough for the family to grow lettuce in the middle of the winter. This clever, imaginative and most importantly sensible use of resources summarizes our goals.

The following information provides some URLs on energy and atmospheric issues. The first URL has been established to continue this year's conversation. Everyone is invited to post comments.

www.energyandatmosphere.blogspot.com
www.bioglass.comwww.engineeringtoolbox.com
www.chelseagreen.com
www.waterunderattack.com
www.energy.gov
www.tandemglass.com
www.desotoglassdesign.com

From left to right, Terrill Waldman, Eddie Bernard, and Pablo Soto

EDDIE BERNARD earned a BFA in glass from Rochester Institute of Technology in 1996 when he also founded Wet Dog Glass, LLC, a business that designs and manufactures high-end glass processing equipment for private, public, and university studios in the United States and internationally in such countries as Japan, Turkey, Scotland, Norway, and Australia. As an artist, he has instructed numerous hot glass workshops at Penland School of Craft; Glass Furnace, Istanbul, Turkey; and The Studio of The Corning Museum of Glass. In 2002, he and his wife founded Conti St. Glass, a community access studio in New Orleans, LA. After Hurricane Katrina, they reconceived the studio as the nonprofit organization New Orleans Creative Glass Institute. He has recently overseen the creation of a second community access glass studio in Star, North Carolina, GlassLab. He is a member of the Board of Directors of GAS, having served since 2004.