Carla Aronsohn

Mr. Alberto Carvalho
Superintendent of Schools
Miami-Dade County

Mr. Carvalho:

I am aware that you have proposed several ways in which the school system can save money in the wake of the dire budget cuts. I want to offer an additional strategy that would both save money and reduce the carbon footprint of the school district dramatically.

I am a student at MAST Academy, where classroom temperatures can be as low as 52 degrees Fahrenheit, colder than a summer's day in Alaska. A comfortable temperature for living is 75 degrees Fahrenheit. MAST used 3,394,003 KwH of electricity in 2007, at a cost of $311,389.04. If the average energy consumption of a house in Miami is 1,000 KwH/month, the energy consumed at MAST would be enough to supply the energy needs for approximately 3,372 houses for one month! In 2007, MAST Academy released 4,683,824 lb of CO_2. To offset this level of emissions we would need to plant 93,677 trees per year! MAST is a small school; imagine the costs and CO_2 footprint at larger schools such as Braddock, Coral Reef, and Michael Krop.

From October 2006 to October 2007 MAST reduced its emissions by 34,920 KwH. As a matter of fact, starting in July 2007 through February of 2008, the school reduced its energy consumption every month and saved 106,140 KwH, which translates to $23,890. These saving are 5.2% of the total for the same eight months in 2006. We were able to save this energy by simple and free energy conservation practices such as turning off lights and placing computers on standby.

The “chillers” are undeniably MAST’s most costly energy expense. The air conditioning represents about 60% of the school’s energy consumption. Typical consumption data, however, suggests that no more than 30-35% of energy costs should come from air conditioning. Very few of the school’s faculty and students would object to raising the temperatures of the thermostats between 2-5 degrees Fahrenheit, which would reduce total energy consumption by 15-30%. This small act would benefit the environment, save money, and tremendously increase our comfort level. The only problem is that MAST Academy, like schools across MDCPS, doesn’t have control over its own thermostats!

I encourage you and the School Board to direct the entire district, including the school board administration building to support energy conservation practices. The money saved could be used to support education during the District’s current financial crisis.

Sincerely and with intent to act,

Carla Aronsohn

I am a senior at MAST Academy and I am currently in the Energy for Sustainability internship with Dr. Wafa Khalil's. I have done extensive research into MAST Academy's energy use for the past two years and feel strongly that MAST could be a model "green" school. I began research on the energy consumption at MAST Academy during my junior year in Solar Energy and Alternatives II and have continued the research in my internship, I performed a general energy audit of the school by recording temperatures in each classroom, testing outlets, and measuring the amount of light in the hallways, atria, and cafeteria. I have compiled a list of energy inefficient areas as well as simple cost effective changes that can be made to further decrease the energy consumption at MAST. Also one of the most obvious problems is the air conditioning, which unevenly cools the school and is set way too low. The average temperatures in MAST were about 20 degrees Celsius while a comfortable temperature would be 25 degrees Celsius. Another key problem is that the light intensity in the school is on average, 50 footcandles, while the recommended light intensity for classrooms is 15 footcandles. I the amount of lights used in MAST were cut in half we would save a great deal of energy without spending any money.

The building of MAST Academy, like the majority of public buildings, was not built with energy in mind; the school lacks many aspects of what is considered an energy efficient building. Major steps have been taken to promote energy awareness at MAST Academy and a comprehensive plan to conserve energy has been assertively presented. By addressing areas of inefficiency in the school MAST could reduce the energy consumption and increase energy efficiency. The success of this approach at MAST Academy could be a model for other schools in the Miami-Dade school system. Another benefit of this exercise would be significant

financial savings for the school district, which would allow the district to hire more teachers, purchase books, maintain summer programs, and pursue renewable energy resources.

Since the beginning of the year 2007, there were many energy awareness programs at the school site. Students of the solar energy program established a comprehensive recycling program to include paper, plastic, batteries, cell phones, ink cartridges, and aluminum cans. There were also signs around the schools reminding students and teachers to turn off the light before leaving the room and to place computers on standby. Over 150 small trees and shrubs were planted, a 2 KW solar system was installed, and more than 6,000 pounds of paper were recycled since in the 2007-08 school year.

I feel as though with the budget cuts that are plaguing Miami Dade County Public Schools, it is imperative to find solutions to lessening the current financial crisis. One of the easiest ways to save money would be if all schools took part in simple energy conservation methods.

The following is some of the data I have recorded over the past 2 years:

Summary of some Energy-related problems identified at MAST

Location	**Problems**
Room 45	Both doors
Room 43	Some windows, bottom of doors
Room 39	Bottom of doors
Room 30-36	Top and bottom of doors
Exit Door by Room 24	Edges and bottom of doors
2nd Exit in Cafeteria	Doors don't close all the way
1st Exit in Cafeteria	Bottom of doors
Exit from English Channel	Between floor and doors
Entrance	Post between doors
Elevator	Bottom and top
Exit Door next to Entrance	Bottom of doors and post
Room 60	Top of doors
Exit close to Room 60	Insulation strips worn down, post, and bottom of doors
Exit by Woodshop	Doors don't close all the way, all around doors

Table 1. Energy-related problems observed around the school building.

Temperatures measured in various rooms at MAST

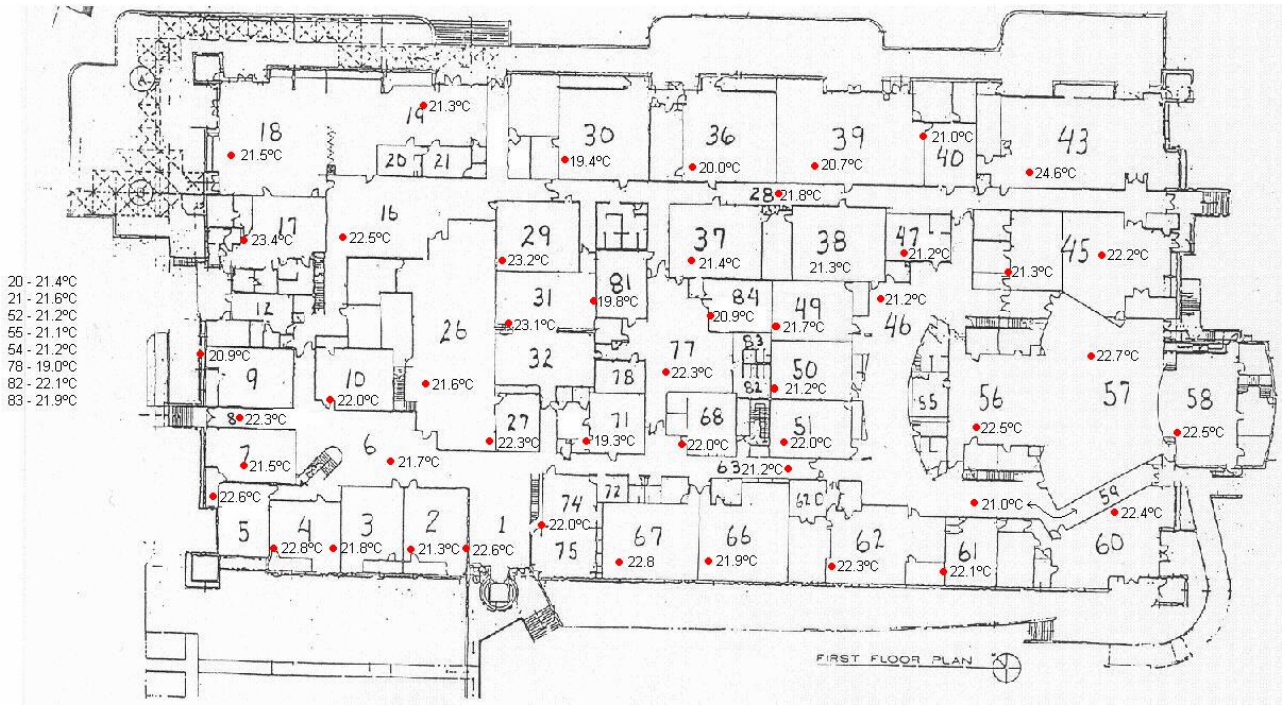

Figure 1. MAST Map; temperatures taken in every room at MAST; the temperatures are measured in degree Celsius.

Light bulbs survey and light intensity at MAST

Light bulb type	Watts	Number of light bulbs	Total watts
Fluorescent	34	2874	97,716
Metal halides	250	117	29,250
Hi hats	40	35	1,400
			Total 128,366 watts

Table 2. Light bulbs survey indicating the various types, the number of each type, and the power (w) of each.

Energy consumption at MAST Academy

MAST Building			
Month	**2005-2006 KWH used**	**2006-2007 KWH used**	**2007-2008 KWH used**
October	104,880	115,530	114,330
November	85,110	107,060	109,980
December	107,520	115,200	105,600
January	102,810	109,560	108,330
February	115,200	117,000	117,090
March	110,550	117,180	121,140

April	114,330	113,820	121,140
May	115,320	115,050	105,120
June	110,400	109,890	95,610
July	105,060	107,160	88,930
August	102,390	107,040	97,800
September	108,780	110,580	101790
Total KWH	1,282,350	1,345,070	1,286,860
Total $$$	$ 117,479.00	$ 128,510.00	$ 120,873.00

Table 3: MAST Building energy consumption comparison from 2005-06, 2006-07, and 2007-08.

PE Building			
Month	**2005-2006 KWH used**	**2006-2007 KWH used**	**2007-2008 KWH used**
October	202,440	188,220	154,530
November	143,400	157,770	152,670
December	155,820	150,360	169,740
January	128,940	149,490	128,010
February	151,080	163,350	141,180
March	149,670	172,920	133,440
April	148,950	191,040	135,540
May	161,850	182,850	143,250
June	138,240	205,290	178,740
July	159,510	146,880	174,120
August	166,830	157,140	185,700
September	167,400	157,710	207,210
Total KWH	1,874,130	2,023,020	1,904,130
Total $$$	$ 171,743.00	$ 184,474.00	$ 179,440.00

Table 4: PE Building energy consumption comparison from 2005-06, 2006-07, and 2007-08.
PE Building and MAST Building

Months	**Total KWH 2006-2007**	**Total KWH 2007-08**	**Difference**
October	268,860	280,770	+11,910
September	268,290	309,000	+40,710
August	264,120	283,500	+19,380
July	254,040	263,050	+9010
June	315,188	274,350	-40838
May	297,900	248,370	-49530
April	304,860	256,680	-48180
March	290,100	254,580	-35520
February	280,350	258,270	-22080
January	259,050	236,340	-22710

December	265,560	275,340	+9780
November	274,830	262,650	-12180
Total	**3,343,148**	**3,202,900**	**-140,248**

Table 5: Total energy consumption of the PE building and the MAST building in 2006-2007 compared to the total energy consumption in 2007-08.

PE Building V. MAST Building from July through October

Months	**MAST Bldg. KWH 2006-2007**	**MAST Bldg. KWH 2007-2008**	**Differences**	**PE Bldg. KWH 2006-2007**	**PE Bldg. KWH 2007-2008**	**Differences**
October	114,330	95,070	-19,260	154,530	185,700	+31,170
September	110,580	101,790	-8,790	157,710	207,210	+49,500
August	106,980	97,800	-9,180	157,140	185,700	+28,560
July	107,160	88,930	-18,230	146,880	174,120	+27,240
Total	439,050	383,590	**-55,460**	616,260	752,730	**+136,470**

Table 6: Energy comparison for the PE building and the MAST Building from July through October 2006-07 and 2007-08.

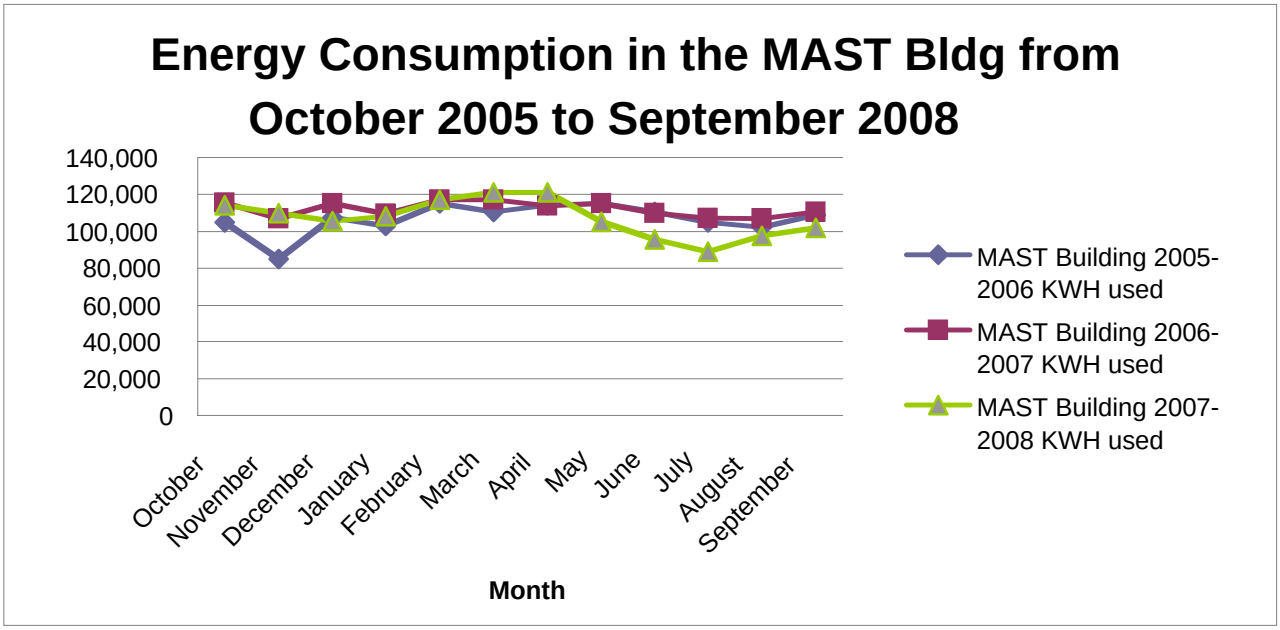

Figure 2. Comparison of energy consumption of the MAST Bldg from October of 2005 to September of 2008.

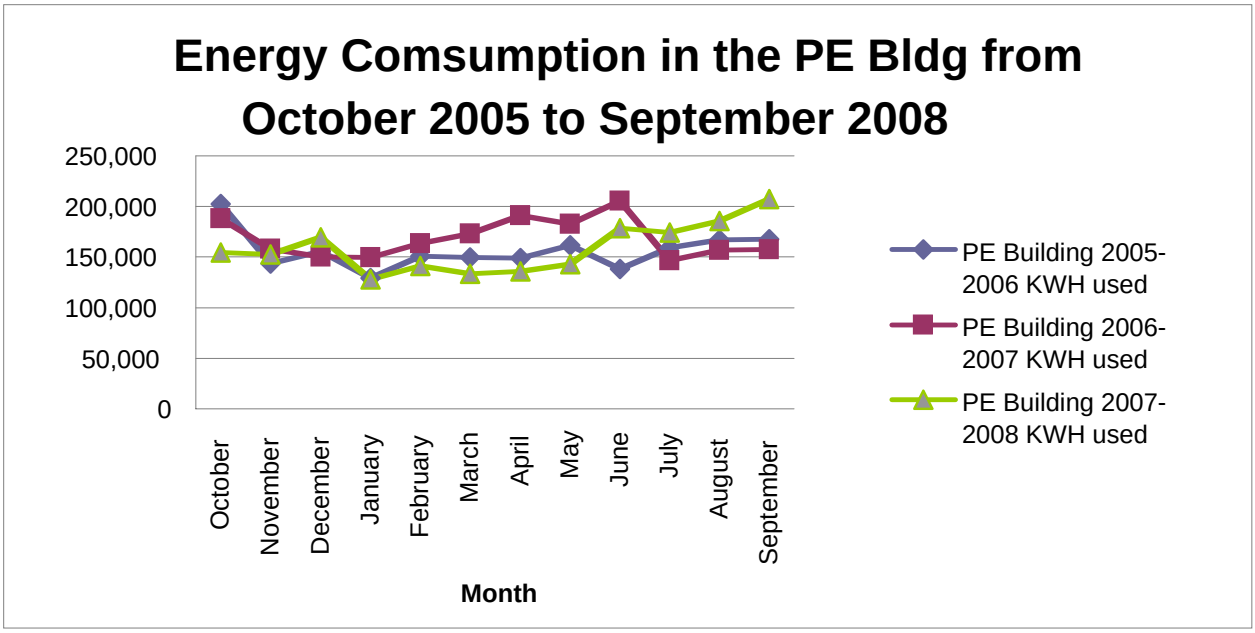

Figure 3. Comparison of the energy consumption in the PE building from October 2005 of to September of 2008