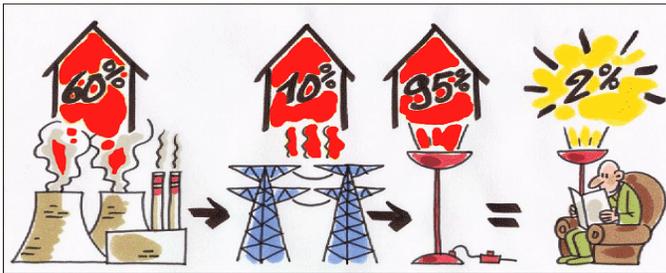




## **Program Manual**

# Introduction to CMCSS Energy Conservation

The Clarksville – Montgomery County School System embraces energy conservation and intends to be good stewards of our natural resources. We believe that energy efficiency and conservation is important to protect our environment, to preserve our natural resources, and to encourage responsible spending of our community's tax dollars. The Energy Conservation Program is designed to educate everyone about energy efficiency and conservation and promote energy efficient habits.



## History

The Clarksville Montgomery County School System (CMCSS) is a public school system with the mission to educate and empower our over 32,000 students to reach their potential. CMCSS operates and maintains a fleet of 277 school buses, 37 school buildings, and three additional support facilities. Annually the District consumes approximately 51,723,289 KWH of electricity, 435,754 gallons of low sulfur diesel fuel, 77,503,900 gallons of water & sewer, 829,010 CCF of natural gas, and 8,328 gallons of propane gas. The cost of these energy and utility purchases exceeds \$7,000,000 annually.

Beginning in the year 2000 the Clarksville-Montgomery County School System took the initiative to upgrade old outdated systems with more energy/utility efficient systems while at the same time enhancing the quality of our schools learning environments. Since that time CMCSS's investments to improve the District's energy/utility efficiencies have realized estimated utility cost avoidance of over **\$32.233.689**. These savings do not include additional savings incurred due to electricity cost increases or for reduced operation and maintenance cost resulting from the upgrades and retrofits which would only make our investment appear even more appropriate.

CMCSS also phased in a system wide energy management system (EMS) and we continue to require that all new construction projects specify that EMS controls be included in their design. This highly sophisticated system allows the District to centrally manage the electricity usage at nearly all of our facilities and also allows the District to manage our demand for electricity by sequencing the start up and shut down of the hundreds of HVAC units, thereby controlling each building's peak demand for electricity. Our EMS controls also provide us with the ability to control the space temperature set points at our facilities.

The District has incorporated energy efficient design features in all of its new construction projects to include some or all of the following energy efficient design features: energy management systems, building orientation to maximize natural lighting, high side lighting windows to reduce glare while maximizing ambient lighting in our classrooms, sky lighting in common areas, improved insulation and reflectivity of roofing materials, high efficiency indoor and outdoor lighting fixtures including both automatic dimming and LED technologies, on demand hot water heaters, waterless urinals, high efficiency flush valves, high efficiency (high SEER rating) mechanical system replacements, geothermal mechanical systems, and insulated concrete forms that double the insulation value of the building. We are actively researching additional energy efficient design features including photo voltaic solar generation roofing systems that will continue the next step in our design process with a goal of eventually designing a net zero building.



### **Campaign for Going Green & Energy Team**

The creation of the CMCSS District Energy Management Project Team was a 2008/2009 & 2009/2010 strategic initiative of the organization. The team is made up of a cross section of the organization including Administrators, Managers, Employees, Classroom Teachers, and Students from across the District including members from each of the following CMCSS departments and sections: Academics, Technology, Communications, Food Service, Custodial, Process Management, and Operations. The creation of this team is the District's next step in our multi year move to achieving maximum energy efficiency in all of our facilities.

The Energy Management Team met over the 2008/2009 school year and generated the introductory Energy Management Program that was rolled out for the 2009/2010 school year. The program continues to grow each school year as the most effective methods of energy conservation are realized and as the more successful aspects and elements of the program are identified and streamlined for the future school years.

The team identified potential energy saving initiatives and developed policies, work instructions, and an award based incentive program. There have been two system wide administrative policies developed, the first is an overall Energy Management Policy and the second is a Temperature Set-Point Policy. Further, there have been two sets of work instructions developed, one detailing the start up and shut down of our facilities by our custodial staff, and the second detailing the start up and shut down of our kitchens by our kitchen staff. Both policies and work instructions can be found on the Going Green Resources link on our website for your review and distribution.

## **Selecting a School Energy Champion**

One of the most important decisions that must be made is the selection of a school or building Energy Champion. The Energy Champion is a CMCSS employee who will act as a liaison between the school/building and the Energy Management Team. Over the school year this individual will assist in monitoring, raising awareness, and educating the teachers, staff, and students at the facility. The responsibilities of the Energy Champion are as follows:

### ***I. Monitor Energy Usage***

- a. Review monthly utility data provided in the quarterly newsletter and compare to previous year's usage.
- b. Record potential energy saving behaviors.
- c. Log after school and weekend use of the facility capturing areas of building occupied along with dates and times.

### ***II. Awareness/Promotion of Qualification for "Smart Energy School Rating"***

- a. Pass along energy news or events that take place at the school to the Facilities Department for content in newsletters.
- b. Distribute newsletters and other energy conservation material.
- c. Announce increase or decrease in the schools energy consumption compared to previous year on a quarterly basis.

### ***III. Education / Implementation***

- a. Educate faculty and students on district implemented energy conservation/management policies, procedures, and work instructions.
- b. Creation of an energy committee at every building and education of the committee and the school community about conservation.
- c. Have each building (committee) create an energy plan designed to meet the goals for that year and have that plan approved by users of the site then submit it to the district
- d. Attend energy conservation meetings and provide information to school energy committee.

## The CMCSS Smart Energy School Challenge



The Smart Energy School Challenge will recognize schools that have the greatest energy reduction for the year based on last year's energy consumption. The Challenge will have three categories: High Schools, Middle Schools, and Elementary Schools.

Each school will receive a quarterly energy progress report that will compare the current year's monthly energy consumption to last year's monthly energy consumption for their school. The report will show percent energy reduction for the quarter. At the end of the year, the school in each category who completes all necessary requirements and who achieves the highest percent energy reduction will receive the coveted "**Smart Energy School of the Year Award**" to display at the school.

### **The CMCSS Smart Energy School Award Program**

CMCSS is dedicated to energy efficiency and energy education. The school district has created the Smart Energy School Award Program to reward individual schools and support buildings for their efforts in energy conservation, awareness, and education.

## **Elements of the CMCSS Smart Energy School Award Program**

Each participating school or support building that successfully completes a Smart Energy School Application and chooses an Energy Champion may compete in the Smart Energy School Award Program. Schools or support buildings meeting certain criteria will be deemed the winners. The top schools at each level (3 Elementary, 1 Middle, and 1 High) obtaining the highest level of energy reduction will receive the coveted Smart Energy School of the Year plaque to display in their school for the following school year.

The following is how each school qualifies for the Green School Award Program:

### **Required Activities**

1. Select a School Energy Champion.
2. Submit after school and weekend activity log.
3. Submit a year end energy program for your school/building.

### **Determining Winners**

Those schools/buildings that perform the required activities listed above will be in the running to be a Smart Energy School of the Year. The final factor determining which schools/buildings will be designated winners will be the location that reduces its energy consumption the greatest. Each location will be competing against itself as consumption is calculated on a per square foot of building basis and then compared to the previous years baseline data.

## **Schools and Support Building Submittal Timeline**

The CMCSS Smart Energy School Challenge runs from July 1st to June 30<sup>th</sup> each year. The CMCSS Smart Energy School of the Year Award application, form “A”, must be completed in its entirety and submitted to the Facilities Department no later than the end of November. The Facility Usage Log and Energy Plan must be submitted prior to summer break.