

Energy Management Plan Mount Vernon Independent School District

PURPOSE:

The intent of this plan is to create a comprehensive document that identifies energy and water conservation and efficiency as significant issues for the entire school district. This document is intended to detail realistic steps that MVISD administrators, staff, teachers, and students will take to address specific energy issues and reach the established goals of the district. This plan should be reviewed and updated periodically as energy technologies and the district's strategic energy plan changes.

I. ENERGY PLAN STATEMENT:

Recognizing our responsibility as Trustees, Administration, Staff, Teachers, and Students of the Mount Vernon Independent School District (MVISD), we are committed to make all reasonable efforts to conserve energy and our natural resources while also reducing the cost of educating our students.

There are three key elements in MVISD's energy strategy:

- 1) **Conservation.** HB 3693 required the reduction of 5% energy use per year for 6 consecutive years beginning with the energy program establishment in 2006. While we have made several energy conservation improvements, we must incorporate long-term strategies to ensure that conservation efforts pay off. This will be accomplished in the short-term by reducing energy usage per student within the District's presently owned and operated facilities and in the long-term by the replacement of inefficient energy and consuming equipment with efficient equipment. A combination of manual and automated operating methods will be employed.
- 2) **Consolidation.** It is the goal of the district to combine multiple meters on individual campuses into a single meter for each campus. This program provides for a more concise method for monitoring demand and consumption.
- 3) **Monitoring.** Monthly and yearly maintenance of accurate records of energy and water demand and consumption will be implemented in the first quarter of 2016, which will allow for periodic audits and analyses. The district is currently tracking, verifying, and posting utility payments in accordance with Texas HB 3693 and state guidelines. Monitoring methods currently used will allow for "per

student” and “per square foot” bench marks with direct comparisons between schools and school classifications. Annual reports of the districts and campus’ accomplishments towards the districts energy conservation and cost saving goals will be provided to the public, to the State Energy Conservation Office (SECO), and to the Texas Water Development Board (TWDB).

This plan commitment is the joint responsibility of the Board and all District personnel including the Superintendent, administrators, principals, teachers, students, support personnel, and patrons. Cooperation is expected on all levels to assure the success of the energy plan. For these reasons, effective energy management shall be incorporated into the criteria used in the evaluation of each campus, principal, and department head administrator.

II. Conservation

A. History

MVISD has a history of being proactive in energy conservation and reduction of energy costs. In 2007, MVISD upgraded most campus lighting from T-12 fluorescent fixtures to more efficient T-8 fixtures, and installed a chiller/boiler system for most buildings on the main MVISD Campus designed to reduce energy usage, improve energy efficiencies, and reduce energy costs to the district. MVISD has already saved thousands of dollars by implementing these energy savings improvements.

B. Goals

The MVISD Board of Trustees is committed to reduce energy consumption by 5% per year through 2020. By following the specific guidelines outlined in Section III following, the district will achieve committed energy savings and, with the help of all administrators, staff, teachers, custodians, and students, additional significant energy savings will be achieved.

C. Responsibilities

To be effective, it is essential that the MVISD energy plan be rigidly enforced. For this reason, responsibilities must be assigned and accepted. The **teachers** will be responsible for implementing this plan in classrooms during the time that he/she is in the classroom. The **Custodial Supervisor** will be responsible for implementing the plan in

all school storage and common areas as well as other occupied areas. **Staff Members** will be responsible for plan implementation within their own offices, lobbies, etc. while they occupy such spaces. The school **principal** will be responsible for the total energy usage of the entire campus. **Coaches** will be responsible for areas in use during student activities.

III. Specific Measures

A. Buildings

Doors and windows of all conditioned spaces will be kept closed. Personal computers, monitors, printers, other office equipment, and lights will be turned off when not in use. Air conditioners should be set at higher temperatures and heaters at lower temperatures when rooms are not occupied. The use of personal heaters is prohibited. Power management features of personal computers should be enabled if available. If power management is not available, software and/or hardware will be installed to shut off such devices after a brief period of inactivity. Where rooms are heated excessively due to sunlight infiltration, plastic solar shielding film can be obtained from the maintenance department. As time and funding allow, buildings and mechanical systems will be added to the existing or future new energy management system (EMS). This will ensure greater control over HVAC operating schedules, improve temperature control, reduce energy consumption, and permit implementation of demand management strategies while reducing energy costs.

B. New Construction

New construction should be designed and built to minimize energy use. The MVISD standard for new construction will be to approach a Net Zero Energy Cost and include a design process for energy life cycle costing analyses. New construction should be added to the existing building automated control system for enhanced energy management capabilities. Alternative energy sources such as passive solar heating and heat recovery should be considered, as well as use of daylight for lighting and other strategies for decreasing building energy consumption. Primary consideration should be given to connecting and/or extending central systems for heating, cooling, and other mechanical systems. Year-round cooling needs should be met by utilizing the most energy efficient systems, for example plate-and-frame heat exchangers versus less efficient air-cooled shell and tube systems. All new stand-alone construction should include utility metering of electricity, natural gas, and water.

C. Lighting

Most lighting at schools is being retrofitted or upgraded to high efficiency T8 fluorescent lighting with electronic ballasts. Remaining areas should be upgraded to more efficient LED lighting as funding becomes available. New construction and remodels should use high efficiency lighting and eliminate incandescent lighting. Interior decorative lighting should be kept at a minimum and exterior decorative lighting should be discouraged. 400/1000 watt metal halide lighting in parking lots will be upgraded to more efficient LED lighting. Lighting levels recommended by the Illuminating Engineering Society Lighting Handbook should be used as guideline to avoid over-lit spaces. Increased use of daylight and daylight controls should be considered because use of day-lit spaces decreases energy costs and may improve productivity.

Teachers, office staff, custodians, cleaning personnel, and students are encouraged to refrain from turning on more lights than are necessary to accomplish their tasks. Remember that most lights not only consume electricity but also give off heat, which, in turn, places an additional load on air conditioning equipment and, thereby, increases the use of electricity necessary to cool the room or area.

All unoccupied areas, even for short periods of time, will have the lights turned off and occupancy switches installed as appropriate. After the school day has finished, custodians and cleaning personnel will turn on lighting only in area they are working in. Lights in all gymnasiums, cafeterias, auditoriums, dressing rooms, etc. will not be left on unless such areas are being used. All exterior lights will be turned off during daylight hours. No football, baseball, soccer, or similar field lighting will be turned on during daylight hours. Decorative or other type personal lamps are prohibited in all offices and classrooms. Incandescent lighting of any type except for approved stage or theatre usage is prohibited.

D. Heating

During the heating season, room temperatures should be maintained between 68 F and 71 F when occupied. Whenever it is economically and technically feasible, night setback features of programmable thermostats will be utilized to allow temperatures to drop to 55 F during unoccupied periods. If not equipped with programmable thermostats, temperature settings for heating should be lowered manually to 55 F or the unit's special areas that require constant or warmer temperatures. The Director of Operations will evaluate requests for exemptions on individual basis. The maintenance department will utilize the most

energy efficient means of supplying heat for approved off-hour/holiday requests. Electric heat strips shall never be used for the control of mold or mildew. If mold or mildew conditions are observed, these must be reported immediately to the maintenance department. Dehumidifiers may be used if necessary.

All classroom and office doors, and windows will be closed when heating equipment is in use. During spring, summer, and fall seasons, when there is no threat of freezing conditions, all steam and forced air heating systems should be switched off. Hot water systems should be switched using the appropriate loop pumps.

Domestic hot water systems for all restrooms shall be set no higher than 105 F. Hot water systems for cafeterias and other cooking areas should be set no higher than 120 F except for dishwashing requirements which may require settings up to, but not to exceed, 140 F. All hot water recirculating pumps will be shut down during unoccupied time periods.

Use of resistant type electric heaters in school buildings will be eliminated. Areas that are either too hot or too cold should be reported as soon as possible to the maintenance department. Personal space heaters, electric blankets, foot or leg warmers, and other energy consuming heating devices are prohibited.

E. Cooling

During the air-conditioning season, room temperatures should be maintained between 75 F and 78 F when occupied. Whenever it is economically and technically feasible, night setback features of programmable thermostats will be utilized to allow temperatures to rise to 82 F during unoccupied periods. The only exceptions to this plan are special areas such as those that require constant or cooler temperatures. The Director of Operations will evaluate requests for exemptions on individual basis. Window or wall air conditioners are used in areas that lack central cooling. If not equipped with programmable thermostats, temperature settings for these units should be raised manually to 82 F or the unit should be turned off when areas are not in use. Administration supervisors are encouraged to accommodate reasonable requests from employees and teachers who wish to wear more casual clothing because of the increased temperatures. Areas that are too cold or too hot should be reported to the maintenance department. Personal cooling devices, including fans, are prohibited.

All classroom and office doors, windows, and vents (except for mandated fresh air intakes) will be closed when cooling equipment is in use.

F. General Usage

All personal computers (PCs), monitors, printers, speakers, copy machine, scanners, laminating equipment, and other office equipment will be turned off as soon as the school day ends. Uninterruptible power supplies should be turned off where practical. Fax machines, clocks, security equipment, and emergency lighting are excluded from this requirement. All PCs, printers, monitors, copiers, and similar equipment should use energy management features (hibernation mode ect.) if the devices are so equipped. If PCs and monitors are not so equipped, software and/or hardware shall be purchased and installed that will perform this function. Personal use devices (outside of break rooms) such as coffee pots, toasters, microwaves, and refrigerators are prohibited.

G. Water Usage

Use of irrigation water should be minimized through rainfall monitoring either by using manual or automated means for ensuring that lawns and fields are not sprinkled during rains. The district should also investigate collecting storm-water for non-potable uses on campuses. Low water use flush valves and flow restrictors on toilets, faucets, and showers should be used in dressing rooms and restrooms. Water that does not go to the sanitary sewer system (such as lawn irrigation, cooling towers, and fountains) should be metered separately to obtain a lower rate or credit from the water supplier. Water leaks, dripping faucets and fixtures that do not shut off should be reported to the maintenance department.

H. Purchasing

Energy efficient products should be purchased whenever possible. For example, see the U.S. Environmental Protection Agency "Energy Star" products list. Recyclable and reusable products should also be purchased when feasible to reduce disposal costs. This is especially true regarding HVAC equipment. The district will immediately cease purchasing less efficient heating and air conditioning equipment both for new installations and replacements at existing facilities.

IV. Continued Success

There are several ongoing activities that will help ensure the success of MVISD's energy plan.

A. Monitoring

No energy conservation program will be successful if progress is not monitored and tracked on a continuous basis. A system tracking monthly bills will be implemented which will allow for periodic audits and analyses. The District is currently posting utility payments in accordance with Texas House Bill 3693, Senate Bill 12, and other state guidelines. Monitoring methods currently used allow for "per student" and "per square foot" benchmarks with direct comparisons between schools. Current up-to-date reports of the Districts' and campuses' accomplishments toward the District's energy conservation and cost savings goals are presently available to the public and to the State Energy Conservation Office (SECO) on the publically accessible website www.TexasSchoolPost.com. MVISD will post all monthly electricity, natural gas, and water bills on this site.

B. Training

Training must be provided to ensure that both operations and service technicians have skills and knowledge to effectively apply the technology used to achieve energy savings. Training will be provided to staff and teachers during "In-Service" seminars prior to each school year plus additional unscheduled training as technology or policies change (e.g., whenever a new EMS system is installed). Classroom training of students will be encouraged using any of the numerous training courses available and endorsed by Energy Star guidelines, state, or federal agencies.

C. Maintenance

Mechanical system efficiency tends to degrade overtime. Proper maintenance is required to ensure that systems operate as efficiently as possible. Preventative maintenance programs were implemented in 2007, which ensure that HVAC filters are now changed on a regular basis and that all HVAC equipment is properly monitored, serviced, and maintenance records are kept-up-to-date. Any energy consuming device that appears to not be in the best possible working order will be immediately reported to the maintenance department for service.

Energy Management Plan Implementation – Key Milestones

The intent of this document is to establish a list of key milestone dates.

1. Calendar year 2016. Establish an effective monitoring process so that usage and demand can be tracked monthly using a per student and per square foot calculation.
2. Calendar year 2016. Standardize heating and air conditioning settings when occupied: Heating between 68 and 71 degrees, and cooling between 75 and 78 degrees.
3. Calendar year 2016. Automate heating and air conditioning controls in the High School Buildings.
4. Calendar year 2016. Upgrade 400/100-watt metal halide parking lot lights to more efficient LED lighting.
5. Calendar year 2016. Upgrade exterior building lights to more efficient LED lighting.
6. Calendar year 2017. Retrofit main cafeteria, and gyms to existing boiler/chiller system. Currently at 40 percent capacity.
7. Calendar year 2017. Upgrade Exterior lighting in commons areas to more efficient LED lighting.
8. Calendar year 2018. Eliminate all personal use items outside of established break rooms. Work is needed to identify campus needs, and to establish a pay for personal use item process to offset the cost of use.
9. Calendar year 2018. Upgrade interior lighting in the Junior High Buildings.
10. Calendar year 2019. Upgrade interior lighting in the Intermediate Buildings.
11. Calendar year 2020. Upgrade interior lighting in the High School Buildings.