



Duncanville Independent School District
Energy Management Plan
2019-2020

Energy Management Plan

Duncanville Independent School District



Dr. Marc Smith, Superintendent

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I. Purpose

In accordance with Texas Education Code Section 44.902, the school board must establish a long-range energy plan, which includes strategies for achieving energy efficiency. This plan and procedures document will serve as the district's long-range energy plan. The primary purpose of an effective Energy Management Plan is to eliminate or minimize energy waste and control costs while maintaining a comfortable and safe environment.

Recognizing that utilities are the largest expenditure for the district after payroll, we believe that the prudent use of our natural resources will aid tremendously in maintaining the highest level of fiscal responsibility. This, in turn, aids in ensuring that more of every taxpayer dollar is used for creating the appropriate environment for exceptional student achievement.

II. Implementation

Implementation of this plan requires the joint effort of the trustees, administrators, teachers, staff, support personnel, and students of the district. Our aim is to save utility dollars while ensuring an environment conducive to learning and working.

The directors of departments and principals shall be responsible for the total energy usage of his/her campus and shall help implement conservation procedures and guidelines during the time that he/she is present in the classroom and on campus. District employees and outside vendor employees are responsible for applying these guidelines and for reporting equipment problems or concerns of noncompliance to principals.

III. Objectives

- Raise awareness of utility consumption and opportunities for savings. Every person is expected to become an "energy saver" as well as an "energy consumer."
- Reduce purchased utility consumption, while maintaining an acceptable indoor environment.
- Measure and track utility usage, in order to create and maintain a long-range energy plan in accordance with Texas Education Code Section 44.902.
- Ensure that prudent conservation measures are used in construction and renovations.
- Explore opportunities to lower costs (rates, billing structure, etc.) associated with utilities.
- Take any logical or practical opportunities to cut off equipment and lights should be taken. Examine your energy use habits and make adjustments as needed.
- Due to the high cost of energy during the summer, every reasonable effort will be made to limit summer scheduling or to consolidate activities to limited zones in a building

IV. Shutdown Procedures

We have four scheduled breaks during the school year.

1. Thanksgiving break
2. Christmas break
3. Spring Break
4. Summer Break

During these breaks, we implement "Shutdown" procedures in order to take advantage of every opportunity to save money. The district turns off and unplugs all unnecessary equipment. The checklist will be mailed out the week of the shutdown.

It is also important that everyone knows that we operate on different heating and cooling set points when the building is unoccupied. Buildings that are not occupied by students are considered unoccupied.

V. Unacceptable Items in Classrooms, Office Areas, and Cubicles (Fire Code Violations):

- Plug-in air fresheners
- Air fresheners
- Heat lamps
- Food warmers
- Candle warmers
- Hot plates
- Microwaves
- Portable heaters
- Heating pads
- Candles (City Fire Code)
- Electric flat or steam irons
- No open flames outside Culinary Arts or Lab areas
- Coffee pots or makers
- Toaster ovens
- Convenience items such as refrigerators, microwaves, coffee makers, and additional lighting are not allowed. If an educational need is present, it will be determined on a case-by-case basis by the facility administrator, Director of Maintenance, or Assistant Superintendent of Operations.

VI. Energy Conservation Guideline for Directors and Principals

- Include energy awareness in staff meetings.
- Consider adjusting building operation schedules for campus programs and equipment operation. Please be sure to follow notification process for HVAC and Maintenance Service Departments to request equipment operation adjustments after hours by using the Reservation system.
- Ensure after hours events are entered into the Reservation system with event details.
- Close shades or blinds when it is warm to reduce solar heat gain. Open them when you are cool or need natural lighting.
- Encourage staff and students to dress for the appropriate season of the year.
- Exterior doors and interior vestibule doors will be kept closed.
- Adopt a last person out policy. The last person leaving labs, classrooms, offices and meeting rooms should be responsible for turning off lights and equipment.
- Report uncomfortable and obvious equipment repair problems using the Eduphoria work ticket system.
- Lights will be turned off in areas unoccupied for more than 10 minutes.
- Campuses will promote water conservation in building operations.
- Conserve water by reporting leaky faucets and running toilets.

- After hours facility usage should be monitored. All after hours events should be entered into the Reservations system with specific details about the event.
- Irrigation should not occur when rains have been sufficient or during school hours. Please report any irrigation issues to Service Center Dispatch at 2260.

VII. Energy Conservation Guideline for Custodial Staff

- Report water leaks and broken windows to Maintenance Services.
- Turn lights on only in room as cleaning is performed. Use lower level lighting when possible.
- Clean large areas that require more lighting such as gymnasiums and cafeterias after school hours. Once areas are cleaned, be sure to turn off the lights.
- Ensure exterior lighting, such as parking lot lights and stadium light, are off during the day.

VIII. Energy Management Controls System (EMS or Building Automation system)

The Energy Management System (EMS) controls much of the district's air conditioning and heating systems. The remaining systems are controlled manually by the district's custodial staff. The EMS allows the district to start and stop the HVAC systems through time scheduling. The HVAC systems are scheduled to operate during the schedule delineated in the Energy Conservation Guidelines. Requests for HVAC operation beyond the hours outlined in the District's Energy Conservation Guidelines must be submitted at least 72 hours prior to the scheduled event. The request can be submitted using the form located under the helpful links tab.

1. Humidity levels will be maintained at 60 percent or less.
2. Buildings will be ventilated according to their design standards.
3. Monitor dew point and adjust outside air dampers accordingly.

IX. District Standard Operating Procedures (SOP)

1. Requests for Building Modifications Pertaining to Energy-Related Matters

- The administrator in charge of any building shall be responsible for requesting any modifications or adjustments in lighting application or operation of mechanical equipment.
- At no time should any employee request modifications or adjustments to custodians or maintenance staff. All requests will be directed to the administrator responsible for that building.

2. Standardized Temperature Settings for Water Heaters

- All thermostats for water heaters shall be set at 105 degrees except for kitchens and areas where 140 degree water is needed for sterilization. Cold water should be used in machines for washing athletic clothing.

3. Standardized Setting of All Thermostats

- The federal and state guidelines permit the temperature settings to be flexible in order to compensate for humidity, building factors, and the grade level of the pupils. (EXAMPLE: Students in the lower elementary grades will require a temperature setting that is cooler in summer and warmer in winter than the older pupils and adults).
- Cooling Season Occupied Set Points¹: 74° F - 78°F Unoccupied Set Point: 85°F
- Heating Season Occupied Set Points¹: 68°F - 72°F Unoccupied Set Point: 55°F
- Set points are in accordance with ASHRAE 55 "Thermal Conditions for Human Occupancy"

4. Authorized Adjustment of Thermostats

- Only district HVAC personnel will adjust thermostat settings. HVAC personnel will adjust thermostat settings based on Director or Principal approval.
- If all the thermostats are calibrated to maintain temperatures within the standard limits, the need for adjustment should be eliminated. If a particular room is not within this range and all windows and doors are closed, the Maintenance department should be contacted through the districts work order system so that trained personnel can resolve the problem.

5. Startup Procedure for Air-Conditioning and Heating Equipment

- At the earliest, all air-conditioning and heating equipment will be started (or adjusted to normal standardized settings) 1 hour prior to the start of scheduled classes. In most schools, the units will be able to meet the desired temperature level within ½ hour from the time the unit is turned on.
- If procedure results in levels of discomfort by the time classes begin, the Administrator in charge shall coordinate with the HVAC department to determine the time the heating or cooling units will be turned on or returned to normal settings preceding the beginning of classes.

6. Air Conditioning Equipment

- Occupied temperature settings shall NOT be set below 74° F.
- During unoccupied times, the air conditioning equipment shall be off. The unoccupied period begins when the students leave the area at the end of the day. It is anticipated that the temperature of the instruction room will be maintained long enough to afford comfort for the period the staff remains in the instruction room after the students have left.
- Air conditioning start times may be adjusted (depending on weather) to ensure instruction room comfort when instruction begins.
- Ensure outside air dampers are closed during unoccupied times.
- Ceiling fans should be operated in all areas that have them when that area is occupied.
- Relative humidity levels shall not exceed 60% for any 24 hour period.
- Air conditioning should not be utilized in facilities during the summer months unless the facilities are being used for summer school or year-round school. Air conditioning may be used by exception only or in those facilities that are involved in team cleaning.
- Ensure dry food storage areas are maintained within code requirements. Typically, this is 55° F-74° F temperature and 35%-60% Relative Humidity. Utilize loggers to verify.

7. Heating Equipment

- Occupied temperature settings shall NOT be above 72°F.
- The unoccupied temperature setting shall be 55°F (i.e. setback). This may be adjusted to a 60°F setting during extreme weather.
- The unoccupied time shall begin when the students leave an area.
- During the spring and fall when there is no threat of freezing, all steam and forced air heating systems should be switched off during the unoccupied times. Hot water heating systems should be switched off using the appropriate loop pumps.

- Ensure all domestic hot water systems are set no higher than 120 ° or 140° for cafeteria service (with dishwasher booster)
- For heat pumps, ensure a 6° dead-band between heating and cooling modes.

8. Operation of Specific Use Areas

- Heating and cooling for kitchens is needed only when the food service employees are present. When they are finished at the end of a normal day, the heating and cooling units should be turned to night setback.
- Heating and cooling for the cafeteria is usually needed during specific periods of each day. If there are no special events occurring between and /or after these activities, then the heating or cooling units can be turned off or adjusted for night setback/setup.
- Lights should be off, during periods of the day, when there is no class being held in gymnasiums. Elementary school, gym lighting should be minimized by all users due to heavy energy consumption of most of the lighting fixtures.
- Special events should be scheduled in advance to ensure that specific use areas are conditioned. Thermostats should be permanently setback in areas or rooms that are not in use.

9. Obstruction of Thermostats and Supply Air Vents

- At no time should any personnel completely or partially obstruct thermostats or vents that supply air to a room. The area around the thermostat needs to be free and clear of any obstruction including desks, computers, or people in close proximity to the thermostat, as it would prevent the sensor to accurately respond to room temperature settings. When the discharge air vent has been purposefully obstructed, excessive heating or cooling is sent to the area resulting in the need for air balancing. This type of application can have damaging, long-term effects on the mechanical systems. If this type of situation exists, contact the HVAC Department.

10. Operation of Equipment During Non-Instructional Periods

- Minimum air-conditioning and/or heat will be provided for district employees during regular school holidays, summer break, and non-instructional time periods. This will be determined by the Director of Maintenance and Assistant Superintendent of Operations.

11. Schedule and Operation of After-Hour Events

- Scheduled, after-hour activities will necessitate the use of heating and air-conditioning, subject to approval of the Administrator in charge. The administrator or person responsible for the use of the building after hours will ensure a shutdown procedure will be followed upon completion of the activity.
- When determining the areas within a building to be utilized for after-hour events, first consideration should be given to the size of the area to adequately accommodate the function. If several areas comply, then an energy-conscious effort should be made to utilize the area that will consume the least amount of energy for heating/cooling and lighting. Events should be scheduled through the HVAC department utilizing Building Reservation Request Forms as far in advance as possible. Services will not be ready and may not be provided for unscheduled events.

X. Standard Operating Procedures For Custodial Personnel

- The custodial staff is an integral part of an effective energy conservation program. Depending on experience, they are perhaps the most knowledgeable personnel within a building in terms of equipment operation and building characteristics. The success of this program will largely be a direct result of custodial and administrative cooperation. With this in mind, it is very important that the custodial staff not only adhere to the following recommendations and suggestions, but also any further recommendations by the Director of Maintenance. Although all of these guidelines may not apply to every facility, the Custodial Coordinator should determine which guidelines directly relate to their facility.
- It is very important that all mechanical rooms (rooms that contain air-handling units, chillers, boiler, water heaters, electrical transformers, etc.) be kept clean at all times. Just as much effort should be given to cleaning these rooms as to any other part of the building. All items (mops, brooms, buckets, stored materials, etc.) should be kept off and away from all equipment. This will help to ensure that the equipment is free of obstruction for proper operation as well as allow the needed accessibility for Maintenance personnel to perform corrective, preventative and emergency maintenance procedures.
- A fluorescent light will accumulate enough dust/dirt in 6 months to reduce the efficiency by as much as 20%; therefore, a regular semi-annual fixture-cleaning program should be implemented at every facility.
- A regular inspection and cleaning schedule for all supply and return air grilles will be established. A regular semi-annual cleaning program should be implemented to remove dust/dirt build-up on all grilles so that complete air circulation is possible. Make sure that all vents are free from partial or complete obstruction.

Disclaimer: Duncanville ISD shall adopt, observe and implement these guidelines as provided. However, these guidelines are not intended to be all-inclusive, and they may be modified for local conditions. These guidelines supersede all previous instructions related to energy conservation or facility management.