ENERGY CONSERVATION MANAGEMENT

I. General

A. **Purpose**: Rock Hill Schools believes that a properly managed energy conservation management program will allow utility costs to be avoided which can be re-directed for improving student achievement. A formal energy conservation management program will also set standards for building systems operation which will eliminate utility waste, increase efficiency and enhance the quality of the learning environment.

A strong commitment by the Board of Trustees, the district administration and all school faculty and staff is the foundation of an effective energy conservation management program.

The program shall establish or promote the following objectives, at a minimum:

Ethical energy use. It will be the responsibility of each district employee to actively participate in energy conservation efforts and to follow guidelines and rules to manage energy consumption and reduce energy waste.

Efficient energy systems. Operation and maintenance of electrical, mechanical, plumbing and technology systems and the building envelope shall be consistent with policy ECF and the goals of the energy conservation management program. The district shall implement and sustain an effective preventive maintenance program for all building systems.

Equity of energy conservation in procurement. Contracts and billing for provision of utilities by commercial or governmental sources shall be routinely reviewed to ensure accuracy of charges and best terms for rates. Energy efficiency shall be a prime consideration in the acquisition of buildings, equipment and other goods and services by the district.

B. **Energy Manager**: The full time professional position of Energy Manager will be in overall charge and will facilitate implementation of an energy conservation management program for Rock Hill Schools. Primary responsibilities of the Energy Manager will be to:

1. direct, monitor, evaluate and report the energy conservation efforts of the district to the Superintendent, who will communicate these efforts to the Board of Trustees.
2. educate faculty and staff on conservation standards and practices, and
3. make periodic visits during school hours, nights and unoccupied hours to ensure practices are being followed, and report results of visits to principals or designated site directors.
4. foster commitment to the program by providing information on benefits and measureable progress in energy conservation to all district employees and the Rock Hill community on a frequent, recurring basis.

See next page

C. **Campus Energy Team**: The principal is responsible for the total energy usage for his/her school campus. He/she serves as the leader of the campus energy team (CET) which will implement the energy management program on campus.

The Energy Manager and the principal will jointly appoint an on-site building energy manager (BEM) for each school campus. The principal and the BEM will be jointly responsible for the judicious use of the energy systems at their campus, ensuring an efficient operating condition is maintained daily.

The BEM will serve as the primary point of contact for campus energy issues, monitor the operation of the campus buildings and their systems, recommend energy saving changes to building systems operating procedures, and identify and implement energy conservation opportunities where possible. Within the CET, the BEM will serve as the central coordinator for the execution of the team's energy objectives. BEMs will receive specific training and support to implement their duties within the energy management program.

The membership of the CET is established by the principal and the BEM and additionally should include:

1. The cafeteria manager
2. The media center coordinator
3. The P.E. teacher or athletic director
4. The secretary or a school office representative
5. A faculty representative.

Each teacher is responsible for implementing procedures prescribed in this rule for energy conservation during the time that he/she is present in the classroom.

Each custodian is responsible during his/her operating shift for control of common areas, such as hallways, lobby, auditorium, etc., as assigned. Since the evening custodians are typically the last persons to leave a building for the night, their designated evening crew leader is responsible to verify proper nighttime shutdown of energy consuming systems.

Other positions included on the CET will be responsible for energy usage within their specific area of the school building. The media center coordinator's responsibilities may also include computer labs or other similar energy intensive areas, at the discretion of the principal.

In central office buildings, directors are responsible for total energy usage for buildings or spaces within buildings or spaces assigned.

D. **Staff Development**: A staff development curriculum on energy management basic principles and district administrative procedures will be implemented to train all district employees (including new hires and substitutes), contractors and outside groups using district facilities.

See next page

E. **Energy Shutdown Procedures:** The CET through staff development will implement a checklist (Appendix 1) for daily and weekend shutdown of each campus. Additionally each CET will implement special checklists for shutdowns prior to Thanksgiving, winter, spring and summer breaks. Modifications and updates to these checklists may be made by the Energy Manager without amendment or re-issuance of this administrative rule. The Energy Manager may issue additional specific checklists for shutdown of specific systems or areas, such as cafeterias, athletic facilities, etc.

F. **Energy Management and Verification System**: An accurate energy management accounting system will measure and verify energy use and cost, according to recognized industry protocol. A monthly report from this system will be submitted to each principal or designated site director showing energy costs avoided and the performance of each school campus compared to an established baseline.

II. Rules and Procedures

A. General Building Envelope Use

1. Classroom doors and windows shall remain closed when HVAC equipment is operating. Ensure doors between conditioned space and non-conditioned space remain closed at all times, such as between hallways and gym or courtyard area.

2. Window blinds should be adjusted to allow the sun to warm the room during the heating season or to block out the sun during the cooling season. After school hours blinds should be closed completely to preserve conditioned temperatures overnight.

3. Exterior doors should not be "chocked" or propped open using objects which allow the door to remain open while unattended.

4. Exhaust fans should be turned off during unoccupied hours except in wiring closets housing IT equipment. Thermostatically controlled exhaust fans shall be set to operate when temperatures exceed 90 degrees in mechanical rooms.

5. Scheduling and utilization of building rooms and spaces should closely match the size of the room to the size of the occupants. Close off and preserve vacant classrooms and other spaces instead of using them "because they're there". Schedule after-hours and weekend/holiday activities in as few rooms as possible.

B. Technology Equipment and Classroom / Office Appliances and Machine Use

1. All office machines, such as copy machines, laminating equipment, label makers, shredders, etc., shall be switched off each night and during unoccupied times. FAX machines and copy machines which serve as network printers are excluded.

See next page

2. Personal appliances: Limitation of personal appliances in school facilities provides a safe learning environment while resulting in reduced energy consumption and demand. "Personal Appliances" is defined as any electrical device used for employee convenience, preparation of food, decoration or amusement in offices and instructional spaces. Although primarily purchased and brought from home by employees, some devices may have been provided by the district.

   a. **Prohibited appliance.** The following personal appliances are generally not allowed in school buildings due to fire, health, safety and insurance regulations: *portable space heaters, hot plates, popcorn poppers, toaster ovens, candle warmers, plug-in gel air fresheners.*

   b. **Restricted appliances – Break Room.** These personal appliances are used for food preparation and storage: *refrigerators, coffee makers, microwave ovens.* In general, use of these appliances should be discouraged in order to control electrical demand. Also subject to state and local regulations, these appliances are allowed in break rooms and other specially designed areas. **They are not allowed in individual classrooms or offices unless specifically authorized by the Superintendent or designee.** Where approved, these appliances must be:

      1) Connected to approved outlets in a manner that will not present a safety hazard or circuit overload,
      2) Cleaned out and unplugged during extended shutdowns.

   c. **Restricted appliances - Individual.** These personal appliances may be used in offices and instructional spaces where necessary for instructional purposes or for medical needs. Examples of restricted appliances include, *table lamps, standing lamps, decorative lighted or mechanical devices, small fans, radios*. In general, use of these appliances should be discouraged in order to control electrical demand. **Use of these devices require prior approval by the principal** and should be controlled by:

      1) Verifying educational or medical need;
      2) Connection of the devices in a manner that will not present a safety hazard or circuit overload,
      3) Switching off devices each night and when not in use during the school day.

   d. All approved items must be UL listed and should be Energy Star rated. **No incandescent light bulbs shall be used in any lamps approved.**

3. All personal computers (PCs) should be turned off completely each night and during extended unoccupied periods. This includes the monitor, local (stand-alone, inkjet type) printer, and speakers. Laptop and tablet computers may be left docked to their chargers but shall be shut down completely during unoccupied hours while charging. Exceptions to this rule must be jointly approved by the Energy Manager and the Executive Director of Technology.

See next page

4. **All major technology server infrastructure, network equipment and network-connected printers must remain on.**

5. During the school or work day, the monitor of a PC desktop workstation should be manually switched off when it is known that the PC will be inactive for more than 30 minutes.

6. The Executive Director for Technology will ensure all capable PCs have been programmed for the "energy saver" mode using the power management feature, such that the monitor sleeps after 10 minutes of non-use. Network-directed energy management features should be set and operated as prescribed by the Executive Director for Technology, advised by the Energy Manager.

7. LCD projectors and other peripheral equipment will be turned off at the end of the school day. Equipment should be programmed to "standby" when no use is detected after 30 minutes during the day.

C. HVAC and Refrigeration Equipment Operation and Temperature Settings

1. To control electrical demand and redundant system operation a uniform date for the transition of Heating and Cooling seasons will be set each year. Actual dates may vary according to weather patterns. The Energy Manager will monitor weather daily and will advise principals and directors when conditions for transition are met and coordinate with the Facilities Services Department for actual equipment changeover.

2. Temperature Settings. Thermostats for HVAC systems shall be set within optimum temperature ranges for the duration of the heating and cooling seasons, as follows:

   a. Cooling season: 73 to 77 degrees F during occupied times.
   85 degrees F during unoccupied times.

   b. Heating season: 68 to 71 degrees F during occupied times.
   55 degrees F during unoccupied times.

   c. "Occupied times" means authorized persons are in the space using it more than once during the normal school or work day, or for more than one hour continuously at any time of day. Rooms containing equipment designated critical by the Executive Director for Technology are considered occupied, subject to special procedures.

   d. Rooms normally occupied during the school or work day should be considered unoccupied when the students or staff leave that area at the end of the school or work day. The building schedules will be set to allow set points to be satisfied 15 minutes prior to students arriving and 15 minutes after students leave. It is anticipated that the temperature of the room will be maintained long enough to

See next page

afford comfort for the period that the teacher remains in the classroom when the students have left.

e. In complement to the temperature set points in the paragraph above, relative humidity levels in conditioned rooms shall not average more than 60% for any 24 hour period.

3. Thermostats that control multiple rooms in a single zone may be adjusted by facilities services or the energy manager in order to obtain acceptable room temperatures and meet room temperature guidelines across the zone.

4. During unoccupied times, which include nights, weekends, inclement weather days and holidays, thermostats on HVAC equipment will be "set back" to the unoccupied heating and cooling set points described above.

5. When HVAC equipment is set back the outside air dampers will be fully closed. This will occur automatically in systems so equipped. In manually damped systems, this will occur during the summer shutdown.

6. Heating and air conditioning start times will be adjusted by trained personnel, dependent on weather, to ensure room/classroom comfort when the school day or work day begins. During extreme winter conditions unoccupied temperature settings may be adjusted to prevent building or property damage.

7. Thermostat adjustments are to be made only by trained personnel (BEMs, facilities services staff, and the energy manager). When room temperatures fall outside the established guidelines, faculty and staff will report the condition first to the BEM, who will survey rooms and document room conditions to Facilities Services so that appropriate action can be taken.

8. Any groups using facilities under the district Facilities Use Policy should not be allowed to make adjustments to any HVAC equipment, over-ride controls or thermostat settings or enter associated mechanical rooms. All exceptions must be approved by the administration of the school.

9. Circulating fans may be used in lieu of or in complement to operating HVAC systems, where they can be installed and operated in accordance with fire, safety and insurance regulations and Facilities Services Department procedures.

10. For heat pumps, ensure a 4 degree F dead-band between heating and cooling modes.

11. Refrigeration equipment including vending machines should be kept in good working order by the responsible party controlling the equipment. Thermostat settings for refrigerators shall be set at 38 – 42 F, and thermostats for freezer equipment shall be set at 0 to 10 F, unless otherwise directed by the Facilities Services Department.

See next page

12. Refrigeration equipment and icemakers in kitchens, lounges, concession stands, offices, classrooms, prep areas and other authorized locations should be switched off during extended unoccupied times such as Christmas and summer break where not required by school operations or health regulations. Products normally stored in these units should be removed and /or consolidated wherever possible to empty the unit for shut down. Manufacturer preservation procedures shall be followed by the school, vendor, or Facilities Services Department in shutting down and re-starting refrigeration equipment. Condition of refrigeration equipment shall be considered in shutting units down to minimize problems with re-start.

13. Vending machines shall be operated in an energy efficient manner. Lighting inside machines used only for advertising purposes will be disconnected and bulbs and ballasts removed. Machines will be equipped where feasible with sensors and controls which power down compressors and fans when no use is detected. All other machines shall be equipped with timers to switch off units during selected unoccupied hours. Vending machines should be de-stocked and unplugged or disconnected during extended unoccupied times.

14. Electric water coolers shall be adjusted to highest practical temperature settings and shall be equipped with timers to switch off units during selected unoccupied hours. Electric water coolers should be unplugged or disconnected during extended unoccupied times.

D. Lighting Control

1. Interior Lighting.
   a. Lighting levels shall be set and maintained according to the Illumination Engineering Society of North America (IESNA) and Energy Star standards:

AREA	FOOT-CANDLES
Classrooms and Labs	50 – 75
Offices	60 – 75
Teacher Workrooms / Conference Rooms	30 – 50
Auditorium Seating	10 – 15
Auditorium Stage	50 – 60
Gymnasiums	30 – 45
Kitchens	50 – 75
Dining Rooms	15 – 25
Corridors	20 - 30

   b. All switch-controlled lighting in unoccupied areas will be turned off. For purposes of lighting control, an unoccupied area is any area where students or staff are absent for more than 5 minutes. For gymnasiums and similar rooms with high intensity discharge (HID) metal halide or similar type lighting, an unoccupied area is any area where students or staff are absent for more than 12 minutes.

See next page

c. Even if a room is equipped with infrared occupancy sensors, occupants should switch lights off manually when leaving a room if possible. This will prevent accidental "passive" activation of lights and save many hours of "burn time" each year.

d. When a classroom or other room designed for group occupancy is only occupied by the teacher, half of the full lighting level should be used (one of two wall switches).

e. In circulation areas such as hallways, lobbies, etc., lighting should be reduced wherever safe and practicable during the normal school or work day and shall be turned off completely during unoccupied times except the minimum lighting required for security purposes.

f. All lights will be turned off when students and teachers leave school. Custodians will turn on lights upon entering the specific rooms in which they are working, and shall shut off lighting when leaving each room, each time. "Lights out" method of cleaning is strictly prohibited.

g. Refrain from turning on lights unless definitely needed. Lights not only consume electricity but also give off heat that places an additional load on the air conditioning equipment, increasing the amount of electricity needed to cool the room.

h. Lights for advertising purposes such as lighted signs, scrolling menu boards, vending machines, glass front concession/drink coolers and snack machines shall be used only as required for school communications and not for third party vendor or product advertisement.

2. Exterior Safety and Security Lighting.
   a. Outside lighting should be used to the minimum extent practicable, primarily for safe passage during occupied hours and as required to support on-campus surveillance systems. During normal after-hours (unoccupied) times, outside lighting will not be left on. Research shows that un-attended, constant outside lighting is not a security requirement or a deterrent to crime. Run times for outside lighting should be adjusted where timers are available and local law enforcement practices allow.

   b. Outside lighting is controlled by energy management systems, photocells and building security alarm systems. At 6:00 am each school-day morning, outside lighting will come on automatically. At other times the building is to be entered at night, as soon as the alarm is turned off, outside lighting will come on automatically. Outside lighting will be automatically switched off by photo-cell in daytime, and switched on again after sunset. When the security system is set at night, all lights including inside and outside lights remain on for 15 minutes and then turn off automatically.

See next page

c. Athletic Field Lighting. To control consumption, athletic field lighting shall not be turned on more than 30 minutes before sunset, and shall not be left on unless the area is being utilized. To control demand, athletic field lighting should be turned on in at least two stages, with at least 35 minutes separation between each group of lights activated.

d. Athletic field lighting standards adopted by Rock Hill Schools are based upon IESNA standards and the NCAA's Best Lighting Practices:

	Foot-Candles			Max:Min	
FACILITY	Horizontal	Vertical 1	Vertical 2	Uniformity	Basis of Standard
District Three Stadium	75	75	45	1.7:1	IESNA Class I; NCAA Regional
District Three Stadium South	50	NA	NA	2.5:1	IESNA Class II
Baseball Field	50 / 30*	NA	NA	2:1 / 2.5:1*	IESNA Class III
Softball Field	50 / 30*	NA	NA	2:1 / 2.5:1*	IESNA Class III
Soccer Field	50	NA	NA	2:1	NCAA Basic Standard
Practice Field	20	NA	NA	4:1	IESNA Class IV
Tennis Courts	75	NA	NA	1.7:1	NCAA Basic Standard
Tennis Courts	75	NA	NA	1.7:1	NCAA Basic Standard
Football/Soccer/ Track Field	30	NA	NA	3:1	IESNA Class III (Field); NCAA Basic Standard (Track)

E. Water Systems and Water Use

1. Ensure that plumbing or intrusion (i.e. roof) leaks are reported and repaired immediately.

2. Ensure all domestic hot water systems are set no higher than 110 degrees F (no higher than 160 degrees F for cafeteria service).

3. Tank-type hot water systems and/or associated re-circulating pumps should be switched off when there will be no demand due to occupancy for more than 30 hours and where means are available. Automatic controllers should be programmed to switch off tank water heaters and/or re-circulating pumps on a daily basis where feasible. Adequate insulation for hot and cold water lines shall be provided.

See next page

4. Tank-less and other instant hot water heating devices, such as dishwasher heating boosters, should remain switched off until the general time period use is required. These devices typically take less than 5 minutes to reach operating temperatures.

5. Irrigation of playing fields, grounds and landscaping shall be limited to the hours of 7:00 p.m. to 9:00 a.m. nightly. For systems with concurrent zone automatic controllers, irrigation shall be limited to the hours of 1:00 a.m. to 7:00 a.m. nightly.

6. Intensity of irrigation of playing fields:

   a. Off-season irrigation: For fields not expected to receive play for at least 6 weeks, irrigation should be no more frequent than once every 2 weeks, including rain events. Such fields should be irrigated lightly, at no more than ¼ inch of water per application (approximately 30 – 35 minutes per application).

   b. In-season irrigation: For fields expected to receive play within 6 weeks, irrigation should be not more than one inch per week total, including rain accumulation throughout the week. Such fields should be irrigated longer (approximately 45 minutes) but not more that three to four times per week, including rainfall events. During each application, soil should be moistened to a depth of six inches to stimulate deep root growth without over-watering, which reduces grass vitality.

7. To incorporate rain events into irrigation intensity, all automatically controlled systems will be equipped with rain sensors. Sensors will be kept in active mode at the controller and will be set to activate (disable irrigation) after not more than a ¼ inch event.

8. When spray irrigating, keep all heads adjusted so as to ensure that water does not directly hit adjacent buildings. Monitor irrigation to insure excessive runoff does not occur; curtail as necessary.

Adopted 11/24/14

See next page