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Energy Technology Pathway Specific Equipment Specifications

The purpose of this document is to provide school districts a standard purchasing procedures document to use when installing or upgrading computer labs. This document provides minimum specifications for equipment, software, furniture, and so forth. The district will be responsible for purchasing and maintaining all equipment, providing proper security, replacing missing equipment, and providing annual funds for the operation of the program. The district is also responsible for providing site preparation and electrical wiring. Schools that wish to purchase items different from those in this specification document will require written permission from the MDE.

Due to budget constraints, districts are encouraged to use existing hardware, software, and furniture and supplement with new items as needed. For existing items, the MDE will waive the requirement to purchase new items if the existing product meets the minimum specifications listed here. Some items in these specifications are listed as “optional,” and it is at the school district’s discretion whether these items should be purchased.

Important Notes Concerning this Document

- **When configuring labs, please refer to both the General Equipment Specifications and Pathway Specific Equipment documents located on the Curriculum Download page. The General Equipment Specifications document contains a list of equipment needed to successfully implement all programs. The Pathway Specific document contains a list of equipment needed for a specific pathway. You will need to order the necessary equipment from both lists in order to implement your program.**
- If labs are shared for multiple programs, be sure the minimum specifications are met for all programs.
- Any requests for Apple computers and/or hardware will be handled on a case-by-case basis by the Mississippi Department of Education. Apple should certify that all curricula, hardware, and software will run with items listed elsewhere in this document
- An existing server may be used with approval from local information technology (IT) personnel and the MDE.
- Existing networking equipment may be used if minimum specifications are met.
- Districts that install a wireless lab must gain permission from the MDE. Contact Christy Todd at ctodd@mde.k12.ms.us.
- Districts may choose to purchase switches with fewer than 48 ports, matching the number of ports to the size requirements of the labs. If using a wireless network, wired switch(es) would be shared among labs according to the district's needs.
- Alternate office productivity, keyboarding, creative suite, and/or CAD software may be used upon approval of the MDE. It is recommended that each district investigate existing software licenses to see if these programs may be added.
- This equipment specification document contains preferred items as well as an alternate “thin client” option. If the thin client option is chosen, it is imperative that ample Internet access be available as online software is readily used with this option.

Energy Technology

Pathway Specific Equipment Specifications

A. Computer Systems and Peripherals

Minimum specifications for lab hardware are based on the current Express Products List (EPL). The Mississippi Department of Information Technology Services (ITS) EPLs have stated dollar spending limits. For instance, for hardware EPLs, the limits are:

- **For purchases over \$50,000, the customer MUST solicit quotations from two or more EPL sellers.**
- For K-12 Schools, the dollar limitation is interpreted by ITS to be \$200,000 per project per school or campus per fiscal year, with a maximum dollar limitation of \$1,000,000 per school district per fiscal year for a project that spans multiple schools within the district.
- Projects costing in excess of \$200,000 are beyond the scope of this delegated process and subject to full ITS review and authorization. Authorization to exceed the EPL dollar limitation is described in the ITS Procurement Handbook under the *EPL Planned Purchase* process, article 013-080. <http://dsitspe01.its.ms.gov/its/procman.nsf/TOC4?OpenView>

Schools that choose to use the ITS EPLs will need to follow the ITS EPL instructions. Schools that choose to advertise for bids are encouraged to use the EPLs to compare prices and quality of equipment submitted on bids.

Inside delivery, installation, and setup must take place by the specified target date. School districts may choose to install the equipment and software themselves or have the EPL vendors perform the installation. If a school prefers that the hardware installation be done by the EPL vendor, the EPL quote must include installation, setup, and training (to be scheduled by each local school district). If a school prefers that the software installation be done by the EPL vendor, the EPL quote must also include pre-loading the software described in Section B “Software,” with the school providing the vendor media and proof of license. Vendors should assume that they will perform hardware and software installation unless otherwise indicated by the school in the quote request.

Vendors must propose systems which are configured with all components provided by the base system manufacturer. If a component is not available from the base system manufacturer, the vendor may propose a compatible third party component only if described in their written proposal. Systems and peripherals must be fully configured prior to shipment.

If a warranted defect is found in an item, that item must be repaired or replaced on-site within five working days of notification. A toll-free or local telephone number with a 24-hour response time must be provided for troubleshooting purposes. In the event that a component must be returned to the manufacturer for warranted repairs, a replacement will be provided by the vendor. Charges for shipping and handling of the component and its replacement must be borne by the vendor during the on-site warranty period. All warranty repairs made to the system during the warranty period must maintain full compatibility of the system with installed software. Any components found to be defective must be replaced with the same brand and model or its successor.

If the school district chooses not to use the ITS EPLs, the Vendor Certification for IT Equipment and software Statement must be signed by the bidder and returned with the bid.

Districts may exercise the option of having all items bid and installed in the specified configuration by a single vendor or multiple vendors. All upgrades are to be installed and operational by the Target Date.

NOTE: If labs are shared for multiple programs, be sure the minimum specifications are met for all programs. Schools may choose wired or wireless labs. They may also choose to use standard computers or the thin-client option.

List item name, description, and number needed per lab. Include websites, if applicable. Add as many lines as necessary.

Capitalized Items:

Not applicable

Non-Capitalized Items

1. Geiger counter (1 per class)
2. Radioactive source (available from chemistry supply house) (1 per class)
3. Sun path calculator
4. Various types of solar panels and mounting system components (4 per class)
5. Inverter
6. Charge controller
7. AC and DC disconnects
8. Electric drill with 1/4" drill bit (1 per class)
9. Oscilloscope (1 per class)
10. Rotameter, 50 to 450 SCFH (1 per class)
11. Pressure regulator, 0 to 30 psi (1 per class)
12. Pressure gage, compound type, 15 mm Hg vacuum to 30 psi pressure, with connecting tee (1 per class)
13. Triple-beam balance (2 per class)
14. High-Voltage Gloves (2 per class)

Classroom Supplies and Consumables

1. Rulers
2. Cutting tool, scissors, or utility knives
3. High-energy ceramic bar magnets: 3/8 in x 7/8 in x 1 7/8 in (1 cm x w.wcm x 4.8 cm){2 per student}
4. *Metal washers with inside diameter of about 1/4 in {4 per student fender washers, 1/4 in flat washer}
5. 30-gauge magnet wire (300 feet per pair of students)
6. Respirators (2 per class)
7. Goggles (1 per student)
8. Hard hats (2 per class)

9. Watch glass
10. Thermometer, Celsius (1 per group of 3 students)
11. Graduated cylinder, 100 ml (1 per group of 3 students)
12. Calorimeter kit (1 per class)
13. Equipment for Fermentation Challenge: Making Ethanol from Cellulose see link:
14. 2 Gallon Bucket (1 per group of 3)
15. Hand-held Multimeter (1 per group of 2)
16. Scientific Calculator (1 per group of 2)
17. Hot pads (1 per group of 3)
18. Alternative Energy:
19. Tape measures (1 per group of 3)
20. Hot glue gun (2 per class)
21. Magnetic compass (1 per group of 3)
22. 4 or 6 inch Wire cutters (4 per class)
23. Enameled magnet wire, 24 gauge (300 feet per pair of students)
24. 1 ½” galvanized iron elbow
25. 1 ½” x 4” galvanized steel pipe nipple
26. ¾” x ½ “galvanized iron bushing
27. Can opener, lever type (3 per class)
28. Hammer (3 per class)
29. Sufficient Osun Technologies RF0010 Radiation Finders or equivalent (1 per class)
30. Flashlight (1 per pair of students)
31. Tongs (1 per class)
32. 110- to 200—watt soldering iron and acid-flux solder (2 per class)

Recommended Instructional Aids

It is recommended that instructors have access to the following items:

1. Computer with Internet access for research
2. Power point software
3. DVD/VCR player with monitor (TV)
4. Internet access for student and teacher computers
5. LCD desktop projector
6. Teacher notebook computer
7. Smartboard