



# Managing Plug Loads and the Phantom's in Your School



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"Finding Little Energy Inefficiencies, Generating Big Energy Savings"





# AGENDA

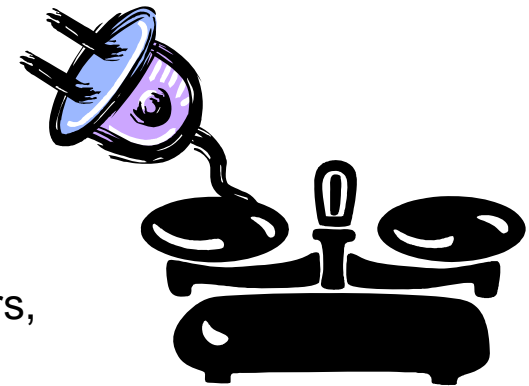
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- Define plug loads
- Plug Load impact on School Energy
- How to control plug loads
- Define Phantom Loads
- Phantom Loads impact on School Energy
- How to control Phantom Loads





- Define plug loads
  - Educational Devices or appliances plugged into a school's electrical system
  - 120/208 volt electrical systems
  - Examples in schools: Copiers, Refrigerators, Pop Machines
  - Examples in the classroom:
    - Computers, TV's, DVD Players, Tape Players, overhead Projector,
    - Boom Box, Radios, CD players, printers, scanners, copiers, fish tanks, mini-refrigerators, toasters, coffee pots, hot plates, overhead projectors, LCD projectors





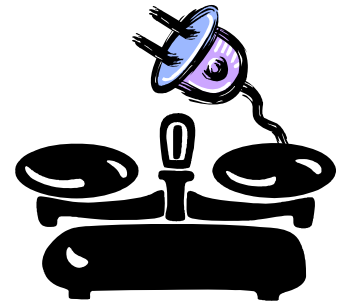
## • Examples of Plug Load Energy

- Coffee Maker, 900 Watts
- Computer, 200 watts
- Television, 100 watts
- Portable Electric Heater, 1200 watts
- Aquarium, 50-1210 watts
- Toaster oven, 1225 watts
- Microwave, 800-1300 watts
- Table Top Lamp, 60-100 watts
- VCR/DVD Player, 30-50 watts
- Laser Printer, 500-800 watts



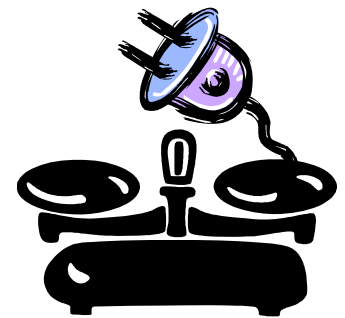


- Plug Load impact on School Energy
  - Recent Survey found the following:
    - High School – 436 devices – Potential Load 104Kw
      - Majority of devices computers or related items
    - Middle School – 340 devices – Potential Load 81Kw
      - Majority of Devices Computers or related items
    - Elementary School – 262 devices – Potential Load 53Kw
    - Computers in Educational Facilities average – 1.3 per thousand square feet
    - Estimated to be 25% of Electrical Energy Use in a School





- How to control plug loads
  - Need to conduct a plug load survey
  - Educational Needs
  - Energy Awareness Training
  - Develop Energy Guidelines for plug loads
    - Include fees for personal items
    - Have “teeth” in the Guidelines





- Plug Load Survey Form



County Public Schools ---				
Plug load survey data	CLASSROOM			
Plug Load Item	Wattage	Change in Wattage	Phantom Load	Number of
<b>Personal Items</b>				
Microwaves	1000		YES	
Toaster Ovens	1200			
1.5 CF Refrigerator	96			
Portable Heaters	1200/1500			
Coffee Pots	600		YES	
2.0 CF Refrigerators	110			
Dehumidifer	900			
<b>Electronic Items</b>				
Televisions	100 average use		YES	
Laser Disc Player	100		YES	
VCR's	25		YES	
DVD Player	30		YES	
Boom Box Radio/Tape	30			
Kitchen Refrigerator				
Pepsi Machine				
<b>Instructional Equipment</b>				
Overhead Projectors	600			
Film Strip Projectors	500			
Audio Tape	30			
<b>Fans</b>				
Wall	200			
Ceiling	100			
Box	100			
<b>Computer/Equipment</b>				
Apple Computers	120/200/250		YES	
Printers	50		YES	
Scanner	100			
Laser Printer	250		YES	
<b>Other</b>				
Aquarium	40			
<b>Office Equipment</b>				
Copiers - Large	1500		YES	
Laminators	2400			
Fax	200		YES	
Copier - Small	600		YES	

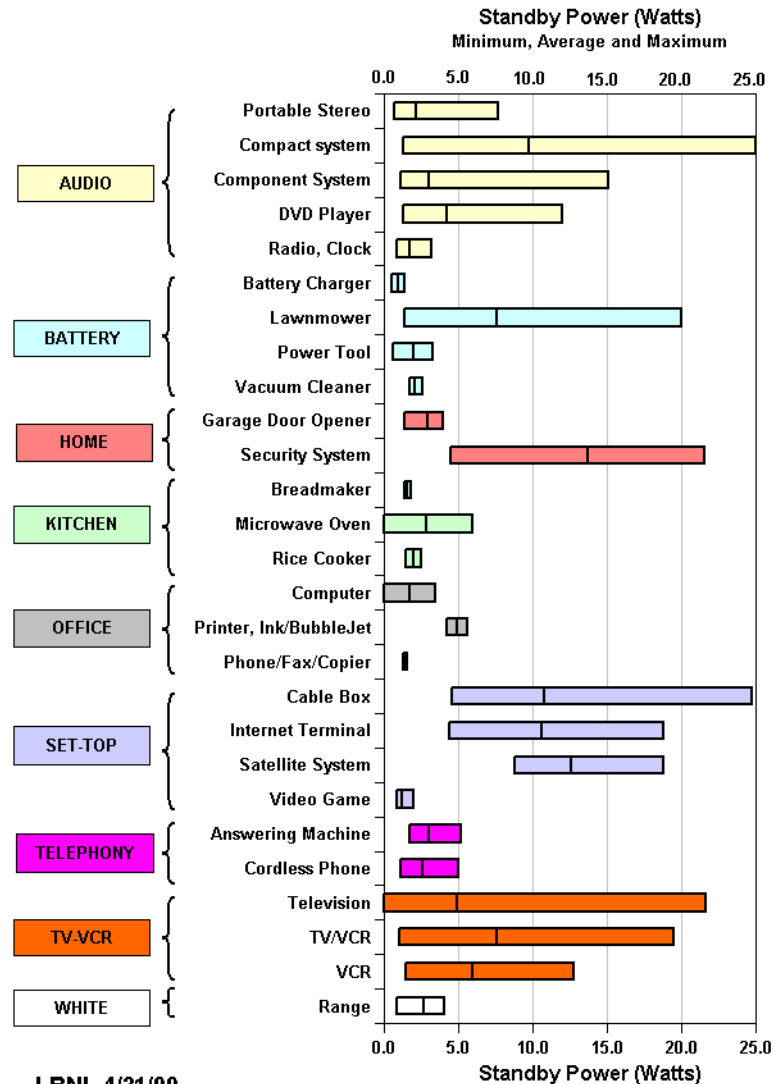


- Define Phantom Loads
  - Phantom loads exist in equipment with electronic clocks or timers, with remote controls, portable equipment and equipment with wall cubes
- Consumes Energy when turned off
  - This equipment can consume energy from 3 to 25 watts per hour when turned off
  - Also known as “Stand-by Power” and “Leaking Power”
  - Wall Cubes Big “Phantoms”





# Phantom Load for common items





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- New Phantom Load Guidance from FEMP



» TV	1 watt
» VCR	2 watts
» DVD Player	1 watt
» Audio Product	1 watt
» Desktop Computer	2 watts
» Workstation	2 watts
» Laptop Computer	1 watt
» Copier	1 watt
» Printer	1 watt
» Fax	2 watts
» Multifunction Device	1 watt
» Docking Station	2 watts
» Scanner	1 watt
» Microwave	2 watts

\*\* Recommended Standby Levels on Jan 2005



- Phantom Loads impact on School Energy
  - Can Account for up to 5% of Energy Used
  - Accumulates Significant Amounts over time
    - Example: VCR flashing 12:00am
    - Over 4 years can consume \$11 +
    - How Many do you have? What about others?





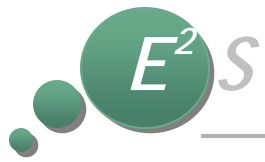
- How to control Phantom Loads
  - Disconnect device after every day
  - Plug into power strips and turn power strips off at the end of the instructional day
  - Education
  - Use of Computer Control Programs like:
    - EZ Wizard for individual PC's
    - EZ Save is a free centrally administered tool to activate MPM Settings on an entire network
  - To obtain these free programs go to [www.energystar.gov/powermanagement](http://www.energystar.gov/powermanagement)



- Keys in Reducing Plug and Phantom Loads
  - Approval and Implement a School Board Energy Policy
    - Implement Guidelines
  - Provide Energy Awareness Training to All Personnel
  - Include Energy Education in the Classroom

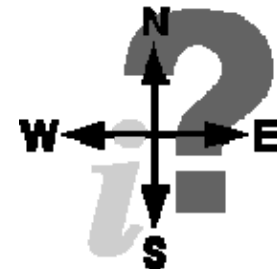
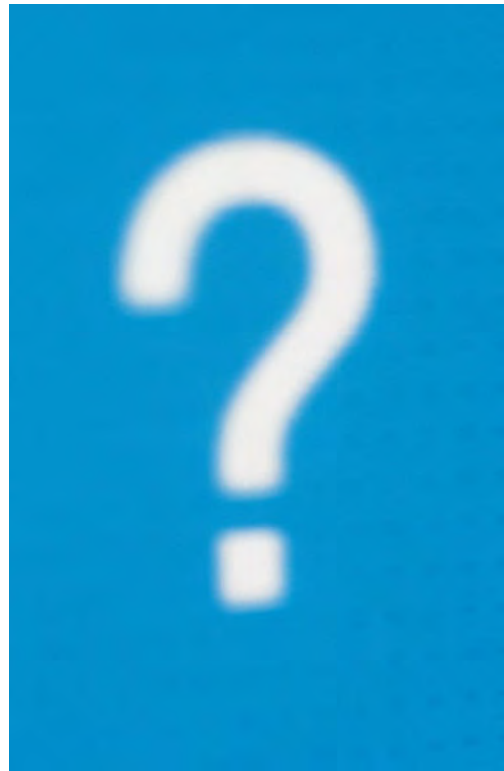


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# Questions

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