Energy
School Campus Audit

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Field Research Introduction: Field research is the collection of data and observations in a certain place or organization. This audit will focus on the energy that we use in our school building for lighting, electronics, and heating/cooling. In this audit you will investigate some basic definitions about energy, where energy comes from, and how your class uses energy.



Overview and Instructions

Permission and Focus Areas: In order to conduct this audit, information will need to be gathered from site/district level administrators such as, Principal/Head of School, Groundskeeper, District Wellness Coordinator, Facilities Manager, or Custodial Staff. It is encouraged that student auditors provide an introduction to the purpose of this audit ahead of time to any decision maker.

Specific Instructions

- **Directions:** Students/Staff complete the baseline assessments in each section to observe and collect data on different aspects of the grounds and outdoors of your school.
- **Materials:** Field research sections (can be printed)
- **Students should:** Get permission from school staff to conduct this audit.
- **Students should not:** Harm wildlife or go into any space without permission

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SECTION 1: SCHOOL/DISTRICT OVERVIEW

1. Name of your school	
2. District your school is located in	
3. City your school is located in	
4. County your school is located in	
5. What is the total student enrollment at your school?	
6. What grade levels does your school serve?	
7. What is the occupancy of each school building in your district? How many days during the school year are those buildings operating at 100% occupancy?	
8. Does your school district have an energy management plan?	☐ Yes ☐ No *→ If Yes, link to it here:*
9. Does your school district's facilities master plan discuss energy conservation?	☐ Yes ☐ No *→ If Yes, link to it here:*
10. Who is the lead school staff working on energy management?	
11. Describe how your school district tracks its energy use. Some examples include: EPA ENERGY STAR Manager Portfolio, internal spreadsheets, utility provided tracking dashboards, other dashboard systems, etc. Link to any relevant tracking documentation.	
12. Describe any written policies, procedures, or board resolutions related to energy consumption for your school/district. Link to any relevant documents.	

SECTION 2: SCHOOL CURRICULUM & CULTURE

Curriculum	
Describe how energy system education is integrated into Curriculum and Instruction, indicate which school site.	
Provide any clear examples of how energy systems education is integrated into core curriculum subject areas:	1) Grade levels receiving lessons about energy: _____ 2) Subject Areas focusing on energy: _____ 3) _____# of teachers total teaching units/lessons on energy 4) _____# of students impacted by these classroom lessons on energy
Describe the most relevant lessons/units being taught on energy.	
Describe any ongoing Professional Development for Faculty and Staff related to energy efficiency.	
Describe any additional efforts specifically on energy that would be related to curriculum and instruction.	
Culture & Community	
List any specific policies that reinforce energy efficiency efforts.	
Describe any student club(s) or Associated Study Body (ASB) activities that support energy efficiency efforts:	
List any activities that exist in co-curricular and extracurricular programming that reinforce energy efficiency.	
Describe partnerships with community based partner organizations (i.e. energy utilities, community based partners, etc).	
Describe any additional energy efficiency efforts that would be related to community engagement and culture.	

SECTION 3: ENERGY SOURCES & COSTS

Which utility companies does your school/district use for electricity and natural gas?	Electricity: Natural Gas:
Does your school/district have any on-site renewable energy sources? (STUDENTS SHOULD NOT GO TO THE ROOF to complete this section of the audit.) Renewable energy is power from sources that can be replenished naturally. These sources include solar, hydroelectric, wind, and geothermal. Schools can be more energy efficient by getting their power from renewable sources.	☐ Yes ☐ No *→ If Yes, describe renewable energy sources? (example: number of buildings with solar panels on the roof, etc.)* *→ If Yes, What is the average annual power generation?* *→ If Yes, what percentage of your school/district's energy use is from on-site renewables?* ___ %

Complete the table below, or provide comparable tracking data on electricity use for each school site in the school/district for at least one year cycle. Note: If there is more than one meter at your school make sure to combine those values together to get a total for each month.

Electricity Bill Tracking			
Month	**Total Cost ($)**	**Total Electricity Used (Kwh)**	**Notes**
	$		
	$		
	$		
	$		
	$		
	$		
	$		
	$		
	$		
	$		
	$		
	$		
	$		

Take the average of the last twelve months to find the following district-wide baseline data points. Note: If district has done recent electricity updates then a comparison of usage and cost can be completed as part of this audit:

Average monthly total cost for electricity district-wide	$_____/Month
Average monthly total electricity used district-wide	_____/Kwh/Month
Average monthly total electricity used per person (take the total monthly electricity usage total and divide by the number of students & staff in the school/district)	____/Kwh/Month/Per Person

OPTIONAL: Visit the utility companies website, or contact them, to determine the source of the energy they deliver to your school district. Check all that apply and give the approximate percentage if known.

Energy Source	Percentage of power used	Source Location (if known)
❑ Coal	_____ %	
❑ Natural Gas/Propane	_____ %	
❑ Solar	_____ %	
❑ Oil	_____ %	
❑ Wind	_____ %	
❑ Geothermal	_____ %	
❑ Nuclear	_____ %	
❑ Other	_____ %	

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Complete the table below or provide comparable tracking data on natural gas use in your school/district for at least one year cycle. Note: If there is more than one meter at your school make sure to combine those values together to get a total for each month.

Natural Gas Bill Tracking			
Month	**Total Cost ($)**	**Total Natural Gas Used (therms)**	**Notes (anything unique about that months bill)**

Take the average of the last twelve months to find the following baseline data points. Note: If district has done recent electricity updates then a comparison of usage and cost can be completed as part of this audit:

Average monthly total cost for natural gas	$_____/Month
Average monthly total natural gas used	_____/Therms/Month
Average monthly total natural gas used per person (take the total monthly natural gas usage total and divide by the number of students & staff in the school/district)	____/Therms/Month/Per Person

OPTIONAL: If your school district has an accessible tracking system for energy use then you could complete the two tables above across multiple years in order to compare how energy use has gone up or down over years.

SECTION 4: LIGHTING

Overview and Focus Question: Schools use electricity to light classrooms. Classrooms need to be well-lighted so that students and teachers can do classwork. Without good lighting students can not see the white board or read books, etc. Schools can have efficient lighting by using fluorescent or LED light bulbs, and by reminding people to turn off lights when they are not in use. The main question to answer in this section is: ***How efficient is the lighting in the classrooms at my school?***

A. LIGHT BULBS

Instructions: Count the TOTAL number of each type of lightbulb and how many lights are ON or OFF:

Light Bulb Type	Total # of Light Bulb Found	Total # of Light Bulb that are ON	Total # of Light Bulb that are OFF
Halogen  Halogen Light Bulbs **LOW Efficiency**	Number of Halogen Light Bulbs:	Number of Halogen Light Bulbs that are ON:	Number of Halogen Light Bulbs that are OFF:
Fluorescent  Fluorescent Light Bulbs **MEDIUM Efficiency**	Number of Fluorescent Light Bulbs:	Number of Fluorescent Light Bulbs that are ON:	Number of Fluorescent Light Bulbs that are OFF:
LED  LED Light Bulbs **HIGH Efficiency**	Number of LED Light Bulbs:	Number of LED Light Bulbs that are ON:	Number of LED Light Bulbs that are OFF:

B. ENERGY EFFICIENCY SIGNS

Instructions: Count the number of signs that remind you to turn off the lights.



Number of Energy Efficiency Signs: _____
Location(s) of Energy Efficiency Signs:

SECTION 5: APPLIANCES



Look for the Energy Star Logo

Overview and Focus Questions: Appliances are tools used to perform a task, and in this audit we are looking at appliances that use electricity to work. Schools use many appliances to do important tasks such as showing lessons, storing food, preparing food, or lighting small parts of a room. Appliances use energy and schools can be efficient by purchasing Energy Star appliances, or turning them off when not in use. The main question to answer in this section is: ***How efficient are the appliances used in my school?***

Instructions: Investigate the energy efficiency of classroom appliances.

Appliance	Total # of Appliances Found	Number of Appliances with Energy Star Label
Computer		
TV		
Monitor		
Projector		
Phone Charger		
Power Strips		
Mini Refrigerator		
Large Refrigerator		
Microwave		
Air Purifier		
Lamp		
Other:		

SECTION 6: HEATING, COOLING, AND VENTILATION

Overview and Main Focus Question: Heating, cooling, and ventilating school buildings make the indoors comfortable places to work and learn. Heating, cooling, and ventilating rooms takes energy. Sometimes these systems run by electricity and sometimes they run by natural gas. Heating, cooling, and ventilation systems can be efficient by giving people power to adjust them throughout the school day, sealing any leaks in windows, and making sure vents are not blocked. The main question to answer in this section is: ***How efficient are the heating, cooling, and ventilation systems in your school?***

A. THERMOSTATS

Definition: Thermostats are devices that control the temperature in a room. Thermostats are usually found by the front door on the wall. What thermostats look like will vary by school site! Ask the Teacher in each room if you can not find a thermostat.

Examples of Thermostats









Instructions: Locate the thermostats and record the temperatures they are set at.

Total # of Thermostats:

Record the **temperature** each **thermostat** is set at:

Location	Temperature Setting

B. VENTS

Definition: Vents are used to pump air into a room to warm or cool it down. Efficient vents will not have anything covering it or stopping the air from moving in or out. Windows also let air in and out of a room and can help cool a room down.

Instructions: Count the number of vents and check if they are blocked or not. Complete the Vents Checklist.

Example Pictures of Vents		
		

Vents Checklist

Total Number of vents in the classroom: _____
Number of vents that did NOT have something blocking it: _____
Number of vents with something blocking it: _____

C. WINDOWS

Definition: Windows can let air in and out of a room and can help cool a room down. Windows are an energy efficient way to get air in and out of a room. Some windows might have leaks, which means that there might be air moving through a crack in the window or the window frame.

Instructions: Count the number of windows in one classroom and check for leaks. Complete the checklist below.

Windows Checklist

Total Number of Windows in one classroom: _____
Number of Windows *with* an air leak: _____
Number of Windows *without* an air leak: _____

SECTION 7: CLASSROOM ROUTINES (Interview a Teacher)

Overview and Main Focus Question: Teachers can help schools be energy efficient by reducing their energy use. It is important that teachers have electricity to run their classrooms. The main question to answer in this section is: ***Are teachers able to make their classrooms more energy efficient?***

Instructions: Ask each teacher the following questions and record their answers.

1. How many lights do you keep on during the school day?	Number of lights on during the school day: _____
2. Do you get enough light from the windows in your classroom to keep lights off during the school day?	YES: ____ NO: ____ OTHER: ____

3. Which appliances do you leave on, turn off or unplug at the end of the school day?

Appliance	Leave ON at end of school day	Turn OFF or Unplug at the end of school day
Computer		
TV		
Monitor		
Projector		
Phone Charger		
Power Strips		
Microwave		
Lamp		
Air Purifier		
Other:		

4. Are you able to change the temperature of your thermostat?	YES: ____ NO: ____ OTHER: ____
5. Are you able to open/close the air vents in the room?	YES: ____ NO: ____ OTHER: ____
6. Are you able to open/close the windows in the room?	YES: ____ NO: ____ OTHER: ____

SECTION 8: PERIMETER AND GROUNDS ENERGY USE

Directions: Conduct a site assessment by accessing and evaluating the areas of highest energy use at your school campuses. If assessing multiple campuses, complete the audit questions for each campus individually, then complete a summary document. If conducting an audit on site auditors should take photos to document the existing energy use practices.

PERIMETER LIGHTING

Walk the perimeter and outdoor areas of your campus to make observations. *If your school has athletic fields make sure you visit those as well.*	
Where are outdoor lights located: ● Outdoor Hallways ● Lamposts ● Field Lights ● Other	What hours do outdoor lights operate? ● Dawn ● During the Day ● Dusk and Evening ● All Night
How is outdoor light use managed?	Are there outdoor lights that need maintenance or repairs?

EV CHARGING

Does your school have EV Chargers available? ● Not at this time ● Yes, for the school fleet (busses, trucks, or golf carts) ● Yes, for employees ● Yes, for students and parents ● Yes, available to the public ● Other	 

TREES

Are trees planted in a way that would lead to cooling effects? ☐ Yes ☐ No *→ If Yes, answer the questions below* Total Number of trees: _____ Total Number of trees that are shading the Blacktop: _____ Total Number of trees that are shading Classrooms: _____ Percentage of Trees Providing Shade that is Accessible by Students: _____	

REFLECTION AND RECOMMENDATIONS

Reflection on Energy Field Research

➔ Discuss your results with school staff or others working on sustainable energy projects at your school/district.



A) On a scale of 1-10, how well was energy being conserved throughout the school district?
1 = Energy was not being conserved at all.
5 = There were signs and examples of energy being conserved.
10 = Energy is being conserved strategically and there were clear examples of this happening with all community members.

1	2	3	4	5	6	7	8	9	10

B) Based on your audit, what could your school/district do to increase energy efficiency?

C) Based on your audit, how could you help school stakeholders integrate energy conservation into the curriculum and overall school culture?