



Eco-Schools USA Energy Audit



Learning Objectives

- To investigate energy use within the school and identify inefficiency.
- To record and analyze energy data.

Curriculum Links

Mathematics, Science, Citizenship, Language Arts

Eco-Schools USA Pathways

Energy, Climate Change

Use these worksheets to help you to complete an Energy Audit. You will use the data you collect to create your Energy Action Plan.

The Energy Auditing documents are provided courtesy of Educational Dividends. Educational Dividends developed the curriculum for Student Power and the award-winning EnergyNet Project (www.energynet.net). Educational Dividends also manages the EnergyNet Project.

There are a number of different audit forms: Energy Lifestyles; Building Envelope; Foundation; Lighting; HVAC; and Equipment. You may need the assistance of your school facility manager or building engineer to answer some of these questions or help you to conduct the audit.

Step 1. Go to each room (classrooms, office, gym, lunchroom, etc.) and answer the questions below for each type of energy audit.

Step 2. Utilize the “Data Driven Decisions” forms to keep track of the number of rooms visited and the total number of each type of energy-wasting behaviors reported.

It may be helpful to determine the percentages associated with each energy-wasting behavior. This would be done by dividing the total number of occurrences for each energy-wasting behavior by the total number of rooms visited. *For example, if 60 rooms had “Lights On But No One’s Home” and the school has 120 rooms, then $60 \div 120 = 50\%$.*

Step 3. Use the “Synopsis of Audit Results” to help to organize your findings.



Eco-Schools USA Energy Audit

ENERGY LIFESTYLES AUDIT FORM

Room Number:	
Purpose:	
Side of Building (North, South East, West):	
We visited this room during the <i>(circle whichever applies)</i> :	<input type="checkbox"/> a.m. <input type="checkbox"/> p.m.
We found the room uncomfortably <i>(circle only if one applies)</i> :	<input type="checkbox"/> hot <input type="checkbox"/> cold
We believe this is due to: <i>(Please be as specific as possible.)</i>	<input type="checkbox"/> temperature settings <input type="checkbox"/> doors and/or windows open or leaking <input type="checkbox"/> blinds not closed <input type="checkbox"/> other: _____ <input type="checkbox"/> other: _____
We found unnecessary: <i>(Please be as specific as possible.)</i>	<input type="checkbox"/> lights left on <input type="checkbox"/> equipment left on <input type="checkbox"/> water left on <input type="checkbox"/> other: _____ <input type="checkbox"/> other: _____
We found the following maintenance problems:	<input type="checkbox"/> broken windows <input type="checkbox"/> cracks <input type="checkbox"/> dripping faucets <input type="checkbox"/> lights left on <input type="checkbox"/> equipment left on <input type="checkbox"/> water left on <input type="checkbox"/> other: _____ <input type="checkbox"/> other: _____
Additional Comments:	
Signed by Auditors:	
Audit Date:	



Eco-Schools USA Energy Audit

BUILDING ENVELOPE AUDIT FORM

Room Number or Location:

Purpose:

Side of Building (North, South East, West):

WINDOWS

From the inside, examine all outside windows for cracks and leaks.

Are the seals between the frame and the pane tight?

Yes No

Can they be opened and closed?

Yes No

Measure the windows:

Size: _____

Window Covering (*Indicate what window covering, if any, is used.*)

Window Covering: _____

OUTLETS

Indicate the number of light switches and electric outlets on any outside walls.

Number of light switches: _____

Number of electric outlets: _____

Do they have insulating outlet gaskets?

Yes No

DOORS

Examine all outside doors for cracks and leaks.

Is the seal around the door and the door frame tight?

Yes No

Can you see light around the frame?

Yes No

Note the number and condition of all outside doors.

Number of outside doors: _____

Condition of outside doors: _____

FOUNDATION:

From the outside, look at the foundation of the building.

Are there any visible cracks?

Yes No

Are there areas where plumbing or wiring is going into the building?

Yes No

TREES/SHADING:

If there are trees around the building, measure the distance from each tree to the building, and draw the location of the trees as they relate to the building wall. Use the space to the right for this drawing.

Identify the type and approximate height of tree (evergreen or deciduous).

Signed by Auditors:

Audit Date:

Credit: Educational Dividends



Eco-Schools USA Energy Audit

LIGHTING AUDIT FORM

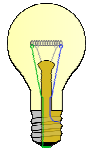
Room Number or Location: _____

Purpose: _____

Side of Building (North, South East, West): _____

DESCRIBE LAMPS USED:

Incandescent:



Number Used: _____

Type of Fixture: _____

Timer: Yes No

Watts per Lamp: _____

Task: _____

Compact
Fluorescent:



Number Used: _____

Type of Fixture: _____

Timer: Yes No

Watts per Lamp: _____

Task: _____

Fluorescent Tubes:

T12

(Size is written on
tube)



Number Used: _____

Type of Fixture: _____

Timer: Yes No

Watts per Lamp: _____

Task: _____

T8

(Thinner than T12)



Number Used: _____

Type of Fixture: _____

Timer: Yes No

Watts per Lamp: _____

Task: _____

LED



Number Used: _____

Type of Fixture: _____

Timer: Yes No

Watts per Lamp: _____

Task: _____

Other:

Number Used: _____

Type of Fixture: _____

Timer: Yes No

Watts per Lamp: _____




Task: _____

Total Wattage of Room:

**NOTE: Complete this AFTER the
audit.**

_____ Watts

Outside / Gym Lights:

<p>Mercury Vapor</p> 	<p>Number Used: _____ Type of Fixture: _____ Timer: <input type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Watts per Lamp: _____ Task: _____</p>
<p>Metal Halide</p> 	<p>Number Used: _____ Type of Fixture: _____ Timer: <input type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Watts per Lamp: _____ Task: _____</p>
<p>Sodium</p> 	<p>Number Used: _____ Type of Fixture: _____ Timer: <input type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Watts per Lamp: _____ Task: _____</p>

Note: In many cases, you will need to consult the building engineer.

<p>Signed by Auditors:</p>	
<p>Audit Date:</p>	

Credit: Educational Dividends



Eco-Schools USA Energy Audit

HVAC AUDIT FORM

Room Number or Location:	
Purpose:	
Side of Building (North, South East, West):	
Was there a thermostat in the room that could be adjusted by occupants?	<input type="checkbox"/> Yes <input type="checkbox"/> No
If yes, what was the thermostat setting?	_____ °F
Temperature of room?	_____ °F
Was the room comfortable?	<input type="checkbox"/> Yes <input type="checkbox"/> No
If no, was it too hot, too cold, and/or drafty?	<input type="checkbox"/> Too Hot <input type="checkbox"/> Too Cold <input type="checkbox"/> Drafty
Was any water dripping?	<input type="checkbox"/> Yes <input type="checkbox"/> No
If yes, from what location? <i>Note: Use the Water Audit from Eco-Schools USA for washrooms, kitchens, locker rooms, and other high water use areas.</i>	_____
Maintenance Issues: <i>Note: Indicate any known maintenance issues. Talk to your facilities manager or building engineer about this.</i>	_____ _____ _____ _____ _____
Additional Comments:	
Signed by Auditors:	
Audit Date:	



Eco-Schools USA Energy Audit

HVAC AUDIT FORM

SYSTEM INFORMATION:

Heating:

What fuel source provides heat for the building?

- Natural Gas
- Electric
- Propane
- Solar
- Wind Power
- Biofuel
- Coal
- Other: _____

What equipment is used to deliver that heat?

- Hot Water Boiler
- Steam Boiler
- Forced Air Furnace
- Other: _____

What is the age of the equipment?

Equipment Age: _____

If boiler, are pipes insulated?

- Yes No

Describe (or attach) the maintenance schedule including cleaning coils and filters and maintaining motors and pumps:

Maintenance Schedule Description:

Ducts:

Does the building have ducts?

 Yes No

If yes, were you able to inspect the ducts?

 Yes No

If yes, were they insulated and sealed?

 Yes No

Describe (or attach) the maintenance schedule for checking the ducts:

Maintenance Schedule Description:

Cooling:

What equipment is used to cool the building?

Type**Model****Size**

Window Air Conditioners (indicate #)

Central Air Conditioner

Chiller

Geothermal

Describe (or attach) the maintenance schedule including cleaning coils and filters and maintaining motors and pumps:

Maintenance Schedule Description:

Temperature:

How is the temperature controlled in the building:	<input type="checkbox"/> Central Control <input type="checkbox"/> Room Controls <input type="checkbox"/> Room Controls with Programmable Thermostats
In the cold months, what is the thermostat setting during the day?	_____ °F
In the cold months, what is the thermostat setting during the night?	_____ °F
If there is air conditioning, what is the thermostat setting during the day?	_____ °F
If there is air conditioning, what is the thermostat setting during the night?	_____ °F
How often are the thermostats calibrated?	<input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Bi-Monthly <input type="checkbox"/> Quarterly <input type="checkbox"/> Semi-Annually <input type="checkbox"/> Annually

Domestic Hot Water:

What equipment provides domestic hot water for the building?	Equipment	Number	Size	Fuel Source	Brand/Model
	Boiler				
	Water Heater				
	Other _____				

Describe (or attach) the maintenance schedule for the domestic hot water system:	Maintenance Schedule Description:
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Note: For a complete water audit, please use the Eco-Schools USA Water Audit Forms

Additional Comments:	
Signed by Auditors:	
Audit Date:	



Eco-Schools USA Energy Audit

EQUIPMENT AUDIT FORM

Room Number or Location:

Purpose:

Side of Building (North, South East, West):

Using the choices below, check the type of equipment found in the room. Estimate the number of hours each piece of equipment is used per day.

Note the watts and amps which can be found on the face plate. For refrigerators, note the brand and model number.

Equipment	Number (Quantity)	Hours Used Per Day	Watts	Amps
Computers				
Printers				
Copiers				
Radio/Stereo				
Television (Please note if it is a plasma screen.)				
DVD Players				
Coffee Pot				
Microwave				
Refrigerator Brand: _____ Model: _____				
Clock				
Other (Please describe): _____				
Other (Please describe): _____				

Other (Please describe): _____				
Other (Please describe): _____				
Total Wattage of Room: <i>NOTE: Complete this AFTER the audit.</i>		_____ Watts		
Note: In many cases, you will need to consult the building engineer.				
Signed by Auditors:				
Audit Date:				

Credit: Educational Dividends



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DATA DRIVEN DECISIONS

Data Driven Decisions:

Keep track of the total number of rooms visited and the total number of each type of energy wasting behaviors reported. For example, the note takers should indicate how many rooms had “Lights On, But No One’s Home.”

It may be helpful to determine the percentages associated with each energy-wasting behavior. This would be done by dividing the total number of occurrences for each behavior by the total number of rooms visited. For example, if 60 rooms had “Lights On, But No One’s Home” and the school had 120 rooms, then $60 \div 120 = 50\%$.

Lighting:

Lifestyles:

Building Envelope:

HVAC:

Equipment:

Additional Comments:

Signed by Auditors:

Audit Date:

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SYNOPSIS OF AUDIT RESULTS

The following form will help you to organize your thoughts and the data you collected.

We visited _____ (#) rooms on the _____ side of the _____ (1st, 2nd, etc.) floor.

Note: For large buildings, you may want to use a separate form for each floor and/or each side of the building.

Lighting:

We found _____ (#) of incandescent lamps. These should be replaced by compact fluorescent bulbs.

We found _____ (#) of T12 fluorescent lamps with magnetic / electronic ballasts. These should be replaced with T8 or T5 lamps with electronic ballasts.

Our exit lights were: _____ (Type: LED or Incandescent). There were _____ (#) of exit lights.

The lights in our gym were _____ (Type) and our outside lights were _____ (Type).
The outside lights were were not on a timer.

Daylighting Opportunities:

Other:

Lifestyles:

We found _____ (#) of rooms with lights left on when no one was in the room.

We found _____ (#) of rooms with equipment left on when no one was in the room.

We found _____ (#) of rooms with dripping water.

We found the following significant comfort issues:

We found the following maintenance issues:

Building Envelope:

We found _____ (#) of leaky windows that should be caulked.

We found _____ (#) of outside doors with gaps that should be weatherstripped.

We found _____ (#) of foundation cracks or gaps that should be fixed.

We found _____ (#) of outlet gaskets that should be insulated.

Other:

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HVAC:

Comments about thermostat settings:

Comments about overall comfort:

Comments about maintenance schedules:

Other:

Equipment:

We found _____ % of non-EnergyStar®/inefficient equipment.

We found _____ (#) pieces of equipment left on unnecessarily.

Opportunities for timers:
