Key for Seattle Public Schools only

Energy Assessment and Audit

School Name: _____ Date: _____

Conducted By:

_____ _____ _____

_____ _____ _____

_____ _____ _____

Congratulations on completing Step 1 by forming your Green Team!

Step 2: Assess

Complete this Energy Assessment and Audit to learn more about energy consumption in your school, and to help your Green Team choose a Lasting Change. Use the *Energy Assessment Guide* to assist you in filling out the following pages. You will need to enter some of your answers into the Key Findings section of your online report card. (*These questions are marked with a star ★.)*

Support

1. Does your school district have a Resource Conservation Manager (RCM)? ☑ Yes ☐ No

   Name _ go to http://bit.ly/sps-conservation for contact information

   If so, consider setting up an interview. RCMs work at the district level to help schools conserve resources and save money.

2. Do you have energy educators or access to technical assistance for energy related issues in your community? ☐ Yes ☐ No

   If yes, list the name(s), agencies, and contact info:

   Technical Assistance = Nicole Laky, SPS_____ Phone #: 206-252-0599

   Educators = See page 10 _____ Phone #: _____

3. Some energy management facilities can be used as educational resources (field trips). Which can be used in your community? see page 10 for more info

Power plant	☑ Yes	☐ No	Location: see page 10
Hydroelectric dam	☑ Yes	☐ No	Location: see page 10
Wind farm	☑ Yes	☐ No	Location: see page 10
Local energy office	☐ Yes	☐ No	Location: _____
Other alternative energy sites	☐ Yes	☐ No	Location: _____

General

4. Does your school include energy efficiency and/or renewable energy as part of the curriculum?

   ☐ Yes ☐ No If yes, please describe: _____

5. Is there a power plant in your county or region? ☐ Yes ☐ No If so, where? _____

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6. What source of energy is used to **heat and/or cool** your school buildings? All schools use electricity and most schools also use natural gas to power their buildings. Check the SPS Shared Savings Energy Graphs to see if your school uses natural gas. http://bit.ly/sps-conservation (click on "Shared Savings") (*Check all that apply. If your school uses all electricity to heat buildings, please indicate and continue to the next question.*)

☐ Natural gas	☐ Solar
☐ Electricity	☐ Wind Power
☐ Propane	☐ Biofuel
☐ Hydro	☐ Geothermal
☐ Coal	☐ Micro-hydro
☐ Other	

_____

7. Research the major sources of your school's **electricity**. Visit your electricity providers website to find the fuel mix. *(Check all that apply and note percentages if available).* http://www.seattle.gov/light/FuelMix/

☐ Natural gas	%_____	☐ Solar	%_____
☐ Propane	%_____	☐ Wind Power	%_____
☐ Coal	%_____	☐ Hydro	%_____
☐ Other _____	%_____		

School Building(s)

Contact a SPS Resource Conservation Specialist for information on the following questions.

8. ★ What is the total square footage of your school's building(s)?
9. If your school has portables:
   How many portables are there? _____
   What is the total square footage of these? _____
10. ★ When was the school building built? _____
11. ★ Have your school's energy systems been updated since your building was constructed?
    ☐ Yes ☐ No If yes, please check all that apply.

☐ New windows _____	☐ Lighting Upgrades _____
☐ Heating, Ventilation and Air Conditioning (HVAC) _____	☐ New Roof _____
☐ Major additions _____	☐ Portable buildings _____
	☐ Other _____

12. If you answered yes above, when were your energy systems such as heating, ventilation, and air conditioning (HVAC) equipment last updated? _____
13. What type of system do you have to heat and cool your building? Check all that apply. Ask your custodian.

Heating:

☐ Steam boiler	☐ Unitary roof-top system

☐ Hot water boiler
☐ Furnace
☐ Other_____
☐ Electric resistance (commonly unit ventilators)
☐ Heat pump (electric, water source, or ground source)

Cooling:

☐ Air conditioner w/gas furnace
☐ None
☐ Air conditioner w/electric resistance
☐ Other_____

14. If your school has portables, do they have separate heating/cooling systems than the main school building? If so, what type? (See above for list) _____
Ask your custodian.

Energy Use

Energy Conversion Information:
1000 BTU = 1kBTU
1 kWh = 3.412 kBTU
1 Therm = 100 kBTU

For more energy conversions you can use the **Energy Star** Unit Conversion Table:
https://www.energystar.gov/ia/business/tools_resources/target_finder/help/Energy_Units_Conversion_Table.htm

15. ★ If your school is not an all electric school, please answer the following questions about **heating/cooling**:
- In what month are you completing your assessment?
- How much energy for **heating and cooling** did your school use this month (Therms and kBTU)?
- How much energy for **heating and cooling** did your school use this month (kBTU/ ft^2 / month)?
- How much did this energy cost per square foot ($/$ft^2$ /month)?

Month: _____	School square footage: _____
Amount of energy used in Therms and kBTU	_____ Therms _____ kBTU
Amount of energy used in kBtu/ ft^2/ month	_____ kBTU/ ft^2/ month
Cost	_____ $/ ft^2 / month

16. ★ Please answer the following questions about **electricity** in your school:
- In what month are you completing your assessment?
- How much energy for electricity did your school use this month (kWh and kBTU)
- How much energy for **electricity** did your school use this month (kBTU/ ft^2 / month)?
- How much did this energy cost per square foot ($/$ft^2$ / month)?

Month: _____	School square footage: _____
Amount of energy used in kWh and kBTU	_____ kWh _____ kBTU
Amount of energy used in kBTU/ ft^2/ month	_____ kBTU/ ft^2/ month

Cost	_____ $/ ft^2/ month

Building Operations

Consider setting up an appointment with your school's resource conservation manager or facility manager to discuss the answers to these questions.

17. How is the temperature in your building controlled? Ask your custodian.

☐ Whole school is set at same temperature ☐ Individual thermostats for each room/group of rooms

Who sets the thermostats?

☐ Individual teacher ☐ Administration/maintenance staff

18. Does your school use programmable thermostats? ☐ Yes ☐ No Ask your custodian.

If so, are these programmed heat up and cool down during times of school occupation and school vacancy?

☐ Yes ☐ No

19. Does your school or district have standards or guidelines for thermostat temperature settings?

☑ Yes ☐ No Go to http://bit.ly/sps-conservation for Policy H25.01

If yes, what are the thermostat temperature settings for the following?

Heating Season: Occupied start time: _____ Temperature: _____

Unoccupied start time: _____ Temperature: _____

Cooling Season: Occupied start time: _____ Temperature: _____

Unoccupied start time: _____ Temperature: _____

20. Are the coils on your school's heating, air conditioning, refrigerators, and coolers cleaned regularly?

☐ Yes ☐ No How often are they cleaned? _____ Ask your custodian.

21. Does your school follow a schedule for servicing your HVAC equipment and cleaning/replacing furnace and ventilation filters? ☐ Yes ☐ No Ask your custodian.

If yes, how often are they serviced? _____

22. Are any exterior doors missing weather stripping or seals?

☐ Yes ☐ No If yes, which ones/how many? _____

23. Are exterior doors propped open during the day when the heater or air conditioner is operating?

☐ No ☐ Yes, some doors ☐ Yes, most doors ☐ Rarely

24. Does the building have insulation in the walls and ceiling? ☐ Yes ☐ No

25. Are trees located close to the building to provide shade during sunny days? ☐ Yes ☐ No

Energy Audit Worksheet

Go to each classroom in each building, the gym, lunchroom, and cafeteria. Fill out the following three tables as you investigate your school. Mark N/A for the answer if the question does not apply.
Note that you may choose to audit a SELECT NUMBER of rooms that are representative of the school. You do not need to audit every room in the building.

Table 1. Lighting. What type of lighting is used in different areas of your school? (Compact Fluorescent - CFL, Incandescent, Fluorescent, High Intensity Discharge - HD, Other, e.g. LED, High Pressure Sodium (HPS))

How is lighting controlled?

*Please see **Assessment Guide** for more information about energy use and environmental impact of these different types of lighting.*

Area	Type of Lighting (CFL, Incandescent, Etc.)	Wall switches? (Y or N)	Multiple switches to provide multiple levels of lighting? (Y or N)	Ability to turn some or all lights off when there is daylight? (Y or N)	Are lights controlled by motion or photo sensors? If so, what type? (Type: Motion/ Photo/Both/None)
Classrooms					
Portables					
Office					
Restrooms					
Cafeteria					
Auditorium					
Gym					
Locker Rooms					
Hallways					
Library					
Stadium					
Parking Lots					
Other					

Please note any related observations here:

Table 2. Appliances. Which and how many (#) of these energy-using appliances does your school have?

Are these appliances turned off at night (Y/N)?

Are any of these appliances unplugged when not in use?

*Please see the Appliance Guide table in the **Assessment Guide** for data on the amount of energy appliances in your school use on an hourly basis. This may help you begin to plan your Lasting Change.*

	#	Y/N	Unplugged?		#	Y/N	Unplugged?
☐ Copiers				☐ Coffee pots			
☐ Printers				☐ Ice Maker			
☐ Scanners				☐ Hot plates			
☐ Computers/Monitors				☐ Dishwashers			
☐ Vending Machines				☐ Refrigerators			
☐ Televisions				☐ Compact Refrigerators			
☐ DVD /VHS Player				☐ Stoves			
☐ Space heaters				☐ Ovens			
☐ Kiln				☐ Clothes Dryer			
☐ Woodshop				☐ Aquarium /Terrarium			
☐ Portable air cleaners				☐ Portable humidifier			
☐ Portable fans				☐ Other			

Please note any related observations here:

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Table 3. School Behavior. Please fill in the table below by visiting at least 10 classrooms in your school and answering the following questions. Five of your classrooms need to be "other" type classrooms like the cafeteria, gymnasium, band room, etc. If your school has portables please include at least one portable in your audit.

	Heating/Cooling						**Electricity**					
Room # or Name	Is the space around vents on walls or windowsills being blocked?		Are windows closed when the heating or cooling is on?		Are blinds closed at night for insulation?		Are lights turned OFF when not required (empty room/sunlight)?		Are computer monitors turned OFF or computers put to SLEEP when not in use?		Are printers, scanners, and other electronic equipment turned OFF when not in use?	
	YES	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**
Example: Rm 23	**X**		**X**			**X**		**X**		**X**		**X**

*If you need more space please make a copy of this table.

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Energy Audit Questions

1. Based on your answers in Table 1, what ***lighting*** related changes could your Green Team implement that would decrease your school's energy use?

2. After assessing ***appliance usage*** in your school for Table 2, what opportunities does your Green Team have to reduce electricity used by these appliances? Could your school decrease the number of appliances used or replace them with more energy efficient appliances?

3. Looking at your results in Table 3, how could the influence of your Green Team promote energy efficiency through behavioral change in the classrooms? Please describe your ideas.

Congratulations—Your Team has completed Step 2: Assess!

Step 3: Address: Make a Lasting Change

Based on your findings in the assessment and audit, choose an Energy Lasting Changes that will address an area your school could improve upon, and that results in a long lasting environmental change. *Note: This must be a new action, not something you are already doing.*

Energy Lasting Change Examples

- ☐ Start a student "Watt-Watchers," "Conservation Patrol," or "Classroom Energy Monitor" program, or rotate student responsibility to perform classroom and school walk-through to monitor and communicate about energy use and conservation practices (turn off lights, monitors, etc.). http://wattwatchers.org/
- ☐ Establish or improve school-wide strategies for turning off all lights when adequate sunlight is available or when rooms are not in use.
- ☐ Establish or improve school-wide strategies to turn off (or put to sleep) all computer monitors, peripherals (printers, scanners, etc.) and other electronic equipment (copiers, typewriters, etc.) when not in use.
- ☐ Implement an equipment consolidation program to ensure that energy is not wasted by using more equipment than necessary (e.g., unplugging and/or removing unnecessary refrigerators and reducing the number of computer printers through networking).
- ☐ If your school has not already done so, convert all lights to CFLs or LED lights. Pay special attention to this in your gymnasium.
- ☐ Set standard heating and cooling points for thermostats to a high of 68°F and a low of 55°F during the winter or heating season. During the summer or cooling season set your thermostats to 76°F or higher. Include a plan to encourage students and staff to dress appropriately for the season so that they will be comfortable with the new settings.
- ☐ Establish a purchasing policy that specifies the selection of energy efficient appliances and equipment when replacement is needed. When going to your principal about replacing these appliances be sure to let them know that the cost to put forth for the new machines will be paid for very quickly with the savings in energy bills.
- ☐ Define your own! What area(s) of energy use did your Green Team discover that could be improved? What changes will you make to result in a *significant* long lasting environmental change at your school? Please describe the unique Lasting Change you are implementing:

Attachments can be found on the Seattle Public Schools website at http://bit.ly/sps-conservation. Click on "Green Team".

Additional Information:

North Cascades Environmental Learning Center
http://ncascades.org/

Seattle City Light's Shrinking Bigfoot program for 3rd – 6th grade
http://www.seattle.gov/light/shrinkbigfoot/overview.asp

Seattle Parks Environmental Learning Centers
Dynamic Education Programs for K-12 Classes and Groups
http://www.seattle.gov/parks/environment/learning.htm

Tours:

- Seattle City Light Skagit Tours
  - Near Newhalem about 115 miles NW of downtown Seattle. Tours include Skagit Power Tours, Diablo Lake Boat Tours, and Newhalem Walking Tours
    http://www.seattle.gov/light/tours/skagit/boat.asp

- Puget Sound Energy Wild Horse Wind & Solar Facility and Renewable Energy Center
  - About 120 miles east of downtown Seattle.
    http://www.pse.com/aboutpse/ToursandRecreation/WildHorse/Pages/default.aspx

This document is available on the Seattle Public Schools website at http://bit.ly/sps-conservation