

Now that you have completed **Step 1: Build a Green Team**, you are ready to proceed in the process of becoming a Washington Green School.

## Objective

**Step 2: Assess.** This Energy Assessment Guide provides tips on how to complete the Energy Assessment and some recommended resources. The goal of completing the assessment is for your Green Team and other school members to get an overview of energy use in the school and where there may be opportunities for increased efficiencies. You will learn about the impact that daily school operations and individual behaviors have on energy efficiency and conservation, gain a better understanding of how and where energy originates, and explore the financial costs associated with energy consumption.

Once your assessment is complete, you will be able to use the answers and the information to identify and implement a policy level Lasting Change (for Step 3) to improve energy efficiency at your school.

## A Successful Assessment Process

- 1. Planning:** Meet with your Green Team and decide who will complete the assessment. Some possibilities are:
  - The whole Green Team
  - A classroom of students and their teacher
  - A combination of Green Team members, classrooms, staff or grade levels
- 2. Finding resources:** Consider whom you will need to call or meet with to answer the assessment questions related to energy usage.
  - Teachers who specialize in this topic
  - School district staff (Resource Conservation Manager)
  - Facilities staff
  - HVAC/ Building Engineer
  - Local utility
  - Purchasing Manager
  - Maintenance staff
  - School administrative staff
- 3. Saving Information:** Put the data collected in a place where it will be accessible to future Green Teams.
  - While some of the information gathered on the assessment will be entered into your report card and saved on the web, most of the details will be contained on your paper assessment or in notes. It is helpful to save data in a central location so future Green Teams can learn from what you did, compare results, and track school-wide success as the work continues.
- 4. Submission:** Remember, in order to certify, you must also scan (or take a picture of) your hand-written assessment findings, and upload them with your other Washington Green School records in your school account at [www.wagreenschools.org](http://www.wagreenschools.org).

## Support Information for Assessment Questions

Assessment Question	Hint	Why It's Important	Related Action Items
<b>Support</b>			
1. Does your school district have a Resource Conservation Manager (RCM)?	Contact your district or facilities supervisor.	A Resource Conservation Manager (RCM) helps schools/districts increase their energy efficiency by improving operations and maintenance and instituting best practices for energy and other resource use in your school. If your school district has an RCM, that person will probably be your best contact at the district level. The RCM is already tracking your energy bills and usage. To find out more about the Resource Conservation Managers in Washington visit: <a href="http://www.energy.wsu.edu/projects/rem/rcm.cfm">http://www.energy.wsu.edu/projects/rem/rcm.cfm</a> .	<ul style="list-style-type: none"> <li>• Contact your local utilities or agencies to schedule speakers on energy conservation or to order classroom resources related to energy conservation.</li> </ul>
2. Do you have energy educators or access to technical assistance for energy related issues in your community?	Work with your principal/school staff to answer this question.	Look to the experts in your community! They can assist you with new programs and provide valuable experience and from-the-field knowledge to support your efforts.	<ul style="list-style-type: none"> <li>• Establish an environmental club, recycling, or other club that focuses on environmental issues in your school and community.</li> </ul>
3. Some energy management facilities can be used as educational resources (field trips). Which can be used in your community? <ul style="list-style-type: none"> <li>• Power Plant</li> <li>• Hydroelectric dam</li> <li>• Wind farm</li> <li>• Local energy office</li> <li>• Other alternative energy sites</li> </ul>	Contact energy facilities to see what the process is for touring the facilities.	Increasing student awareness by touring facilities used for energy production/management can help students understand the importance of energy efficiency and conservation.	

Assessment Question	Hint	Why It's Important	Related Action Items
<b>General</b>			
4. Does your school include energy efficiency or renewable energy as part of the curriculum? If so, please describe?	Ask your principal/ school administration.	Including energy efficiency or renewable energy as part of the curriculum will increase awareness of the actions students and staff can take to conserve energy.	<ul style="list-style-type: none"> <li>• Add renewable and non-renewable energy sources, global warming, ecological footprints, carbon footprints or energy efficiency themes into the curriculum for appropriate grades.</li> </ul>
5. Is there a power plant in your county or region? If so, where?	<p>Contact your local utility/electricity provider for this information.</p> <p>Coordinate with a teacher or other school staff to schedule a tour of a power plant.</p>	Increasing students' understanding of the source and impact of their school's power use can aid in conservation efforts.	<ul style="list-style-type: none"> <li>• Take a field trip to your local power plant and share information with the whole school community.</li> </ul>
6. What type of energy is used to <b>heat and/or cool</b> your school buildings? ( <i>Include percentages.</i> )	To obtain this information contact your school district building services director, RCM, business manager, facility manager, or your energy provider.	Different types of energy sources have varying levels of environmental impact. Awareness of the type of energy used by your school will aid in assessing your schools ecological or carbon footprint.	<ul style="list-style-type: none"> <li>• Learn about solar energy to heat water. Determine if solar-heated water would be appropriate at your school and present your findings and ideas to your administration or other audience.</li> </ul>
7. What are the major sources of your school's <b>electricity</b> ? ( <i>Include percentages.</i> )			

Assessment Question	Hint	Why It's Important	Related Action Items
<b>School Building(s)</b>			
8. What is the square footage of your school's building(s)?	Ask your facilities manager.	Knowing the square footage of your school buildings will help to calculate the cost of energy per square foot so you can compare with other schools.	
9. When was the school building built?	Contact your principal/ school administration to determine when the school was built.	Knowing what year the school was built can aid in determining building techniques and energy systems that were commonplace and available at the time.	
10. Have your school's energy systems been updated since your building was constructed? If yes, what type?	Contact your principal/ school administration to determine when major renovations or system upgrades were made and identify what they were.	Knowing what changes have taken place in the history of the building can help determine opportunities for improvements. Also, knowing the age of a building connects the relationship of energy efficiency and building structure, technology and design, age of materials, or presence of insulation or sealants.	<ul style="list-style-type: none"> <li>• Research what new equipment, retrofits and/or energy-efficient technology your school might need. Before recommending the purchase of new equipment, be sure to identify the criteria that decision makers need in order to invest in new equipment, such as payback period and legally mandated requirements. A good resource is the U.S. Department of Energy's Rebuild America Program, which offers technical resources to school districts.</li> </ul>
11. How old is your heating, ventilation, air conditioning (HVAC) equipment?	Contact your facilities manager/ HVAC building engineer to determine how old the HVAC equipment is, and what type it is.	<p>HVAC systems are one of the main energy consumers in commercial buildings. A well-maintained HVAC system can lower utility costs, reduce replacement costs, and benefit the health of building occupants (occupants' health is covered in <i>Healthy School Buildings</i>).</p> <p>Older HVAC equipment may not be as energy efficient as some newer models.</p>	<ul style="list-style-type: none"> <li>• Research equipment retrofits or energy-efficient technology for your school and identify criteria that decision-makers may need to invest in equipment.</li> <li>• Establish a purchasing policy that specifies high-efficiency/air-cooled hot water heaters when replacement is needed.</li> </ul>
12. What type of system do you have to heat and cool your building(s)?			

Assessment Question	Hint	Why It's Important	Related Action Items
<b>Energy Use</b>			
<p>13. Please complete the table below by answering the following questions about energy use at your school for <b>heating/cooling</b> (if source is other than electricity):</p> <ul style="list-style-type: none"> <li>In what month are you completing your assessment?</li> <li>How much energy did your school use this month for <b>heating and cooling</b> (KBTU/ft<sup>2</sup>/month)?</li> <li>How much did this energy cost per square foot (\$/ft<sup>2</sup>/month)?</li> </ul>	<p>Contact your principal/school administration or RCM.</p> <p>Teachers can include lessons on calculating or converting watt-hours, kilowatt-hours, British Thermal Units (BTU), and energy cost of operation.</p> <p>ft<sup>2</sup> = square foot.</p>	<p>Assessing what the school has paid in energy costs will help establish a baseline for comparison in energy usage over time and will also help with translating energy savings to dollars saved.</p> <p>Calculated energy and cost per square foot enables energy use comparison among schools.</p>	<ul style="list-style-type: none"> <li>Begin tracking your school's energy use and associated costs. Students could use this data to create charts, graphs, give presentations to community members or other audiences, and display monthly usage results in a common area. Tracking your school's energy use could help measure the impact (and financial savings) of your newly adopted energy efficiency practices.</li> <li>Benchmark your school's energy consumption. Benchmarking is a process where you calculate a building's energy use and compare it with other similar buildings in your area. Look at the detailed instructions in the action list to determine which data you will need to gather and track.</li> <li>Connect with other schools and share information.</li> </ul>
<p>14. Please complete the table below by answering the following questions about energy use at your school for <b>electricity</b>:</p> <ul style="list-style-type: none"> <li>In what month are you completing your assessment?</li> <li>How much energy did your school use this month for <b>electricity</b> (kWh/ ft<sup>2</sup>/ month)?</li> <li>How much did this energy cost per square foot (\$/ft<sup>2</sup>/month)?</li> </ul>			

Assessment Question	Hint	Why It's Important	Related Action Items
<b>Building Operations</b>			
15. How is the temperature in your building controlled? Who sets the thermostats?	Ask your facilities manager/ HVAC building engineer.	<p>HVAC system controls can be located and operated in one place if the system is centrally located or have several individual controls if the system is a distributed system.</p> <p>Using standards for determining thermostat set points should aid in increasing efficient use of HVAC systems if the set points are based on seasonal changes as well as occupant use needs.</p> <p>A teacher has an added responsibility in energy conservation if he or she controls the classroom thermostat.</p>	<ul style="list-style-type: none"> <li>• Give a presentation to school district, school board, PTA, or other group, proposing a revised or new district policy or procedures that would address energy efficiency practices in all schools within the district.</li> <li>• Research what new equipment, retrofits and/or energy-efficient technology your school might need. Before recommending the purchase of new equipment, be sure to identify the criteria that decision makers need in order to invest in new equipment, such as payback period and legally mandated requirements. A good resource is the U.S. Department of Energy's Rebuild America Program, which offers technical resources to school districts.</li> </ul>
16. Does your school use programmable thermostats? If so, are these programmed to reach set points that match the times that the school is occupied?	Ask your facilities manager/ HVAC building engineer.	<p>Programmable thermostats allow the HVAC system to run preprogrammed heating and cooling set points. Programs can be adjusted to reflect the time of day, seasonal changes, and changes in the types of activities occurring during occupancy. This maximizes the efficiency of the HVAC system. Programmable thermostats also eliminate daily decisions or actions for lowering temperatures at the end of each day.</p>	
17. Does your school or district have standards or guidelines for thermostat temperature settings? If yes, what are they for heating/cooling seasons and occupied and unoccupied times?	Ask your facilities manager/ HVAC building engineer.	<p>Ideally, classroom thermostats should be set at 68 degrees during the heating season and at or above 75 degrees if an air conditioning system is operating. Schools may vary based on unique conditions.</p> <p>When school is not in operation, thermostats should be set to the lowest/highest temperature possible while still sufficiently heating/cooling the building.</p>	

Assessment Question	Hint	Why It's Important	Related Action Items
18. Are the coils on your school's heating, air conditioning, refrigerators, and coolers cleaned regularly?	Contact your facilities manager/ HVAC building engineer.	Regularly scheduled servicing and maintenance of HVAC equipment aids in continued optimum energy efficiency.  Cleaning or replacing furnace and ventilation filters improve indoor air quality and keep systems from having to exert more energy to push air through soiled filters. For increased energy efficiency and indoor air quality, ventilation filters should be replaced every 1- 6 months.	<ul style="list-style-type: none"> <li>• Have appropriate school/district staff regularly check mechanical equipment and perform proper cleaning and preventative maintenance. Find out if this is already being done by interviewing appropriate staff or reviewing maintenance procedure guidelines, and depending on your findings, present information, recommendations and benefits to the appropriate audience and request that these options be adopted.</li> </ul>
19. Does your school follow a schedule for servicing your HVAC equipment and cleaning/replacing furnace and ventilation filters?	Contact your facilities manager/ HVAC building engineer to determine what the schedule is for servicing the school's HVAC equipment.		
20. Are any exterior doors missing weather stripping or seals?	Check for weather stripping and sealing around the doors by running your hands around a closed door to see if you can feel any air coming through. Look around the doorframes for any obvious air gaps between the door and frame.	Weather stripping and seals are an integral part of the building envelope. Missing seals and weather stripping are places that can leak heated or cooled air. These heating or cooling losses can require HVAC systems to run more frequently and increases energy use.	

Assessment Question	Hint	Why It's Important	Related Action Items
21. Are exterior doors propped open during the day when the heater or air conditioner is operating?	Complete a "doors audit" with your Green Team and the facilities manager during the day when the heating or cooling system is running.	Open exterior doors allow cooled or heated air to escape from the building. These heating or cooling losses can require HVAC systems to run more frequently and increase energy use.	<ul style="list-style-type: none"> <li>Establish school-wide strategies to make sure doors to the outside of the building are not left open longer than necessary when heating and cooling. Classrooms should also keep windows and doors closed when heating and cooling.</li> </ul>
22. Does the building have insulation in the walls and ceiling?	Ask your facilities staff/ HVAC building engineer to determine insulation materials and levels.	Insulation in the walls and ceiling is an integral part of the building envelope. Adequate insulation aids in slowing down the conductive transfer rate from hot spaces to cool spaces. Dept of Energy has an insulation fact sheet: <a href="http://www.ornl.gov/sci/roofs+walls/insulation">www.ornl.gov/sci/roofs+walls/insulation</a>	
23. Are trees located close to the building to provide shade during sunny days?		Trees located near the building may provide shade to the building and decrease solar heat gain by absorbing solar rays into the tree canopy.	