

Water Conservation Guide

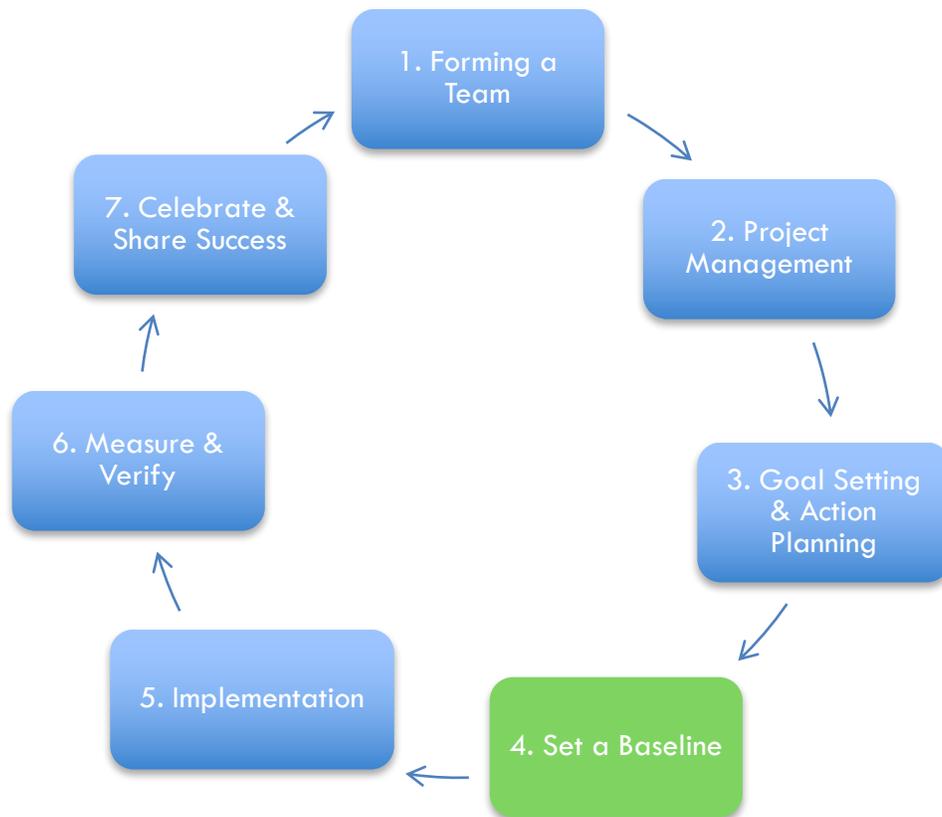


Information and tools
to design and
organize a water
conservation
campaign at your
school

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4. Set a Baseline



Section 4 includes tools to help establish a baseline for your conservation goals. A baseline is the amount of water you use prior to starting your water conservation effort. You can use your baseline to create a specific goal and compare your results against. Knowing your baseline will help you measure your success!

Setting a Water Baseline

First, your team will need your monthly water use data to compare to your future use. Retrieve as much utility data as possible, preferably from the past three years. You can acquire water data by requesting copies of your school's water utility bills or meter readings from an administrator or from a facilities manager. This may be a good request for a faculty sponsor to make, instead of a student. Remember to explain to school district staff that your Green Team is working on saving water at your school, and you are requesting water usage data to help measure the success of your conservation campaigns.

After receiving your school's water data, calculate the average monthly water consumption. To do this, record the total number of centum cubic feet (CCF) used for each month of available data, add them together, and divide by the number of years. The average water consumption in each month will be your baseline. An example can be seen below:

Month	2013	2014	2015	Baseline (CCF)
August	55,520	55,991	56,156	55,889
September	91,893	91,052	91,651	91,532
October	90,251	91,872	91,870	91,331
November	89,903	89,955	89,956	89,938
December	64,857	64,857	64,110	64,608
January	80,002	80,946	80,000	80,316
February	79,000	79,657	79,684	79,447
March	81,154	81,287	81,999	81,480
April	83,154	82,287	83,978	83,140
May	90,154	91,099	90,838	90,697
June	50,520	50,111	51,003	50,545
July	50,520	51,111	52,003	51,211

You may want to convert your measurements from cubic feet into gallons. To do this, use the following conversion:

$$1 \text{ CCF} = 100 \text{ ft}^3 = 748 \text{ gal.}$$

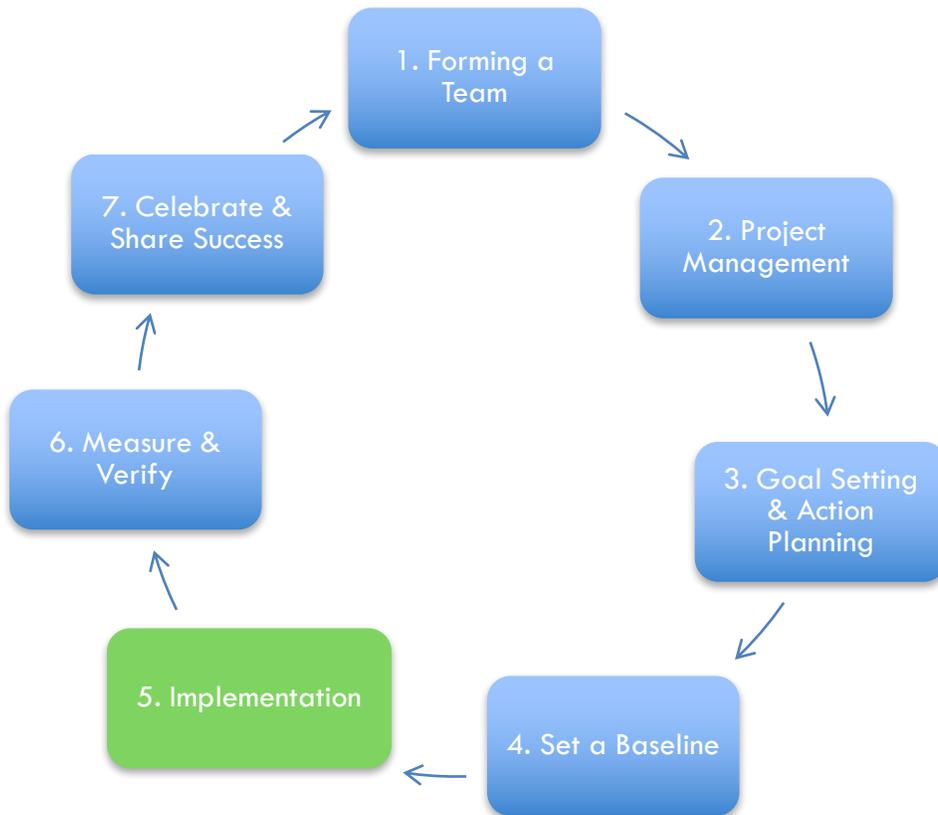
Example:

$$88,878 \text{ CCF/month} \times (748 \text{ gal}/1 \text{ CCF}) = 66,480,744 \text{ gal/month}$$

Record this information in an easily accessible location. Make sure that all team members understand what these numbers mean. Your Green Team may choose to request more recent data throughout the school year. Then, you can begin to measure the success of your programs by comparing the baseline energy usage to energy usage during the time of your conservation campaigns.

If your school's water bill is bi-monthly or quarterly, and you would like to view your water data at shorter intervals, ask the water company for a monthly breakdown, if it is not already detailed on their bill.

5. Implementation



Section 5 offers suggestions on strategies to include in your Conservation Action Plan to reduce water consumption at your school. Not all strategies will fit your team's scope, but this section will act as a guide to project development and implementation.

The first section of Section 5 focuses on behavioral water conservation strategies. These are strategies that everyone in your school can utilize. Spreading the word and leading by example are key to the success of a behavioral conservation campaign.

The second part of Section 5 focuses on water retrofit and upgrade projects. These are more substantive projects for your team to undertake, and will require more support and buy-in from facilities operations and administration. We provide guidelines and supplemental resources to help you implement these impactful water-wise projects.

Identifying Water Saving Opportunities

Conduct a Water Audit

- Complete a water audit of your school and share the results with the administration. Prepare a presentation with images of key conservation opportunities identified to use as an educational tool within the school community, and use information from your audit to inspire projects for your Conservation Action Plan.
- School Water Assessment Curriculum can be found on the SEI website at www.seiinc.org. If you are interested in water conservation in your home, see our SEI Home Water Assessment.
- Invite a utility representative to conduct a professional water audit of the school. That person will walk through the facility, taking inventory of every point where water is used. For items such as toilets and faucets, the inventory will include the item, its location and its flow rate. They will also look into the mechanical and refrigeration systems at your campus, which can be large users of water. The auditor will make recommendations, such as whether to replace any water fixtures with low-flow fixtures or to install flow restrictors. Share your results with the school community and make recommendations to the administration based on the results.
- If your team does not have the time or capacity to complete a full-scale water audit, you may decide to conduct a walk-through audit of your school. See the information below for conducting a walk-through water audit.

Walk-Through Audit Planning and Checklist

Planning for the Visual Audit

- Schedule an audit with the student team and school administration. Explain the goals of an audit and be sure to schedule enough time; audits generally require around 2 hours (leave more time for larger schools).
- Email site administrators and facilities managers the week of and the day before to remind them of the schedule and audit needs (introduction to staff, tour, access to the entire building and classrooms. Ideally, work with school administration and facilities managers to provide you with a set of keys to use during the audit).
- Determine which rooms you will audit and get permission from staff to audit those rooms. Talk to the teacher who is in the classroom to make sure they don't have class on the day and time that you want to audit their classroom.
 - Audit at least 2 classrooms. Choose a classroom in every building if there are multiple buildings. Try to audit rooms that have different types of water fixtures, i.e. faucets, toilets, drinking fountains, showers, or dishwashers.
 - Each school will vary, but set a minimum target to document 3 classrooms, 1 bathroom, the staff room/lounge, the kitchen or cafeteria facilities, and the locker rooms (if applicable).
- What to bring: a camera (with a full battery charge and clean memory card), note pad, pen, flow rate bag and drip gauge. (Check your local utility's website for information on borrowing water flow rate bags and drip gauges.)

Conducting the Visual Audit

- Throughout the audit, take notes and pictures of water saving opportunities and best practices to recommend, so that you can refer back to them and use them as visuals in any presentations or reports.
- Conduct an audit of sample rooms. Note how many faucets are in each room, and if they have low-flow fixtures.
- Take the list of best practices below and record areas that your school can improve or areas that your school already does well.

After the Audit

- Work with the student team to refine your action plan for reducing the school’s water consumption and perhaps create an educational PowerPoint with images from the audit of water saving opportunities. This can be used in assemblies, classroom presentations and staff meetings to educate the school community.
- You can use the areas of improvement you identified during the audit to create targeted water conservation strategies. (For example, if you found faucets that were leaking because they were not all the way shut off, you can create signs to remind people to make sure the faucet is all the way closed. Or, if need be, submit a work request.)

Water Conservation: Best Practices

There are many ways that you can save water. Your campaign can promote water conservation not only in your school, but at home and in the community as well! Below is a list of Best Practices.

1

9. Check for leaks: A leaky faucet that drips at the rate of one drip per second can waste more than 3,000 gallons per year. That's the amount of water needed to take more than 180 showers!² Even a slow leak of only 12 drips per minute wastes about 1.73 gal/day; that is almost 632 gallons of water per year!

- ✓ Be sure to check for leaks from sink faucets, drinking fountains, irrigation lines and sprinklers, toilets, and pipes.
 - Use this Drip Calculator from the American Water Association, or contact your local utility for a drip gauge (they are usually free.)
 - <http://www.awwa.org/resources-tools/public-affairs/public-information/dripcalculator.aspx>
- ✓ If you find a leaky faucet on your campus, notify or place a work request with facilities ASAP.



¹ Image Source: <http://energy.gov/energysaver/reduce-hot-water-use-energy-savings>

² <https://www3.epa.gov/watersense/pubs/fixleak.html>

- ✓ Check for a leaky toilet by placing a drop of food coloring in the rear toilet tank. If the color shows up in the bowl within 10 minutes without flushing, you have a leak. Make sure to flush immediately after this experiment to avoid staining the tank.
- ✓ Don't let water run down the drain: catch this water in a bucket or other container instead and re-use it around the class or school instead.
- ✓ If you are waiting for the water to heat up, use a bucket to catch the cold water coming out of the faucet and save it for use later.
- ✓ Don't let the water run while you are washing your hands. Shut it off and only turn it on again when you are ready to rinse.
- ✓ Limit shower times in the locker room.

10. Use the Dishwasher

- ✓ Energy Star dishwashers, and most new dishwashers, are more water and energy efficient than washing dishes by hand. Average Energy Star dishwashers use about 4 gallons of water per load. An average faucet runs 2 gallons of water per minute.³ So, unless you can wash all of the dishes that your full dishwasher holds with the water running for less than 2 minutes total, washing by dishwasher will save you more water.
- ✓ If you want to find out how much water your dishwasher uses, check the Energy Star Product Finder.
 - <https://www.energystar.gov/productfinder/product/certified-residential-dishwashers/results>
- ✓ Be sure to only run the dishwasher when it is a full load.
- ✓ Don't rinse your dishes before placing them in the dishwasher.

11. Go to the Car-Wash

- ✓ Most professional car-washing facilities use less water to wash your car than you would use if you were washing it at home.⁴ In addition, if you wash your car at home, all of your washing chemicals and detergents run-off into the storm drain or directly into the watershed. Car-wash facilities must dispose of the waste in accordance with local regulations. This means that washing your car at a professional car-wash is overall better for the environment.
- ✓ There are also car-washes that use water reclamation systems to recycle their water. Inquire at your local car wash.

12. Irrigate gardens and landscaping during the coolest times of day

- ✓ Early in the morning and late in the evening are the best times of day to water your gardens or lawns. Watering at these times reduces water loss due to evaporation from the hot sun.

³ <http://www.treehugger.com/kitchen-design/built-in-dishwashers-vs-hand-washing-which-is-greener.html>

⁴ <http://auto.howstuffworks.com/car-wash10.htm>

- ✓ Also, sprinkler heads can sometimes get bumped or twisted so that they are actually pointing in the opposite direction of the plants they should be watering. Check sprinkler heads to make sure they are oriented correctly. Wet sidewalks or asphalt are an indication that your sprinklers need adjusting.
- ✓ If irrigation systems are set on automatic timers, make sure that they do not come on when it is raining.

Incorporate water-friendly food products into daily life

- ✓ It takes 1,799 gallons of water to produce one pound of beef⁵, equivalent to the amount of water that we would use to take over 80 five-minute showers. Strive for Meatless Monday's once a week to save water.
- ✓ A one-liter plastic bottle of water uses almost 1.4 liters of water to be manufactured and packaged.⁶ Every time a plastic water bottle is purchased, nearly half a liter of water is wasted. Avoid buying plastic bottles and instead reuse an alternative bottle that can regularly be refilled to save water.

Work with your team to identify more ways you can save water at your school! Check out this Drought Response Best Practices webpage from the California Department of Education: <http://www.cde.ca.gov/ls/fa/sf/bpdrought.asp>

⁵ <http://foodtank.com/news/2013/12/why-meat-eats-resources>

⁶ <http://www.npr.org/sections/thesalt/2013/10/28/241419373/how-much-water-actually-goes-into-making-a-bottle-of-water>

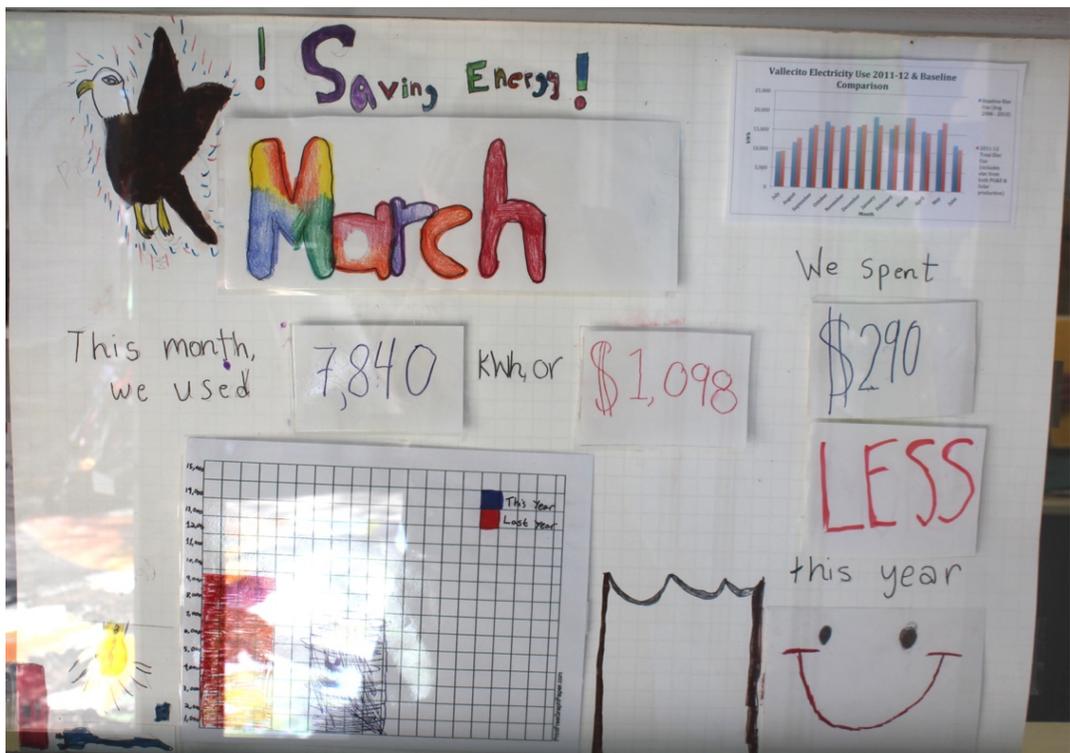
Water Conservation Strategies

School Resource Reduction Strategies are plans of action that your school can take to conserve natural resources and reduce environmental impact. The strategies listed in this section are ideas for things you can do at your school to reduce water use.

Raise Awareness

- ✓ Create posters about the importance of water conservation around your school. Remind people to check for leaks, turn off the sink while hand washing, and wash full loads of dishes or laundry, etc. Let them know how much water and money it saves! Use catchy slogans, like:
 - “If we don’t learn to conserve, we’ll all be fish out of water”
 - “Do your best and use less”
 - “Do your part, be water smart”
 - “Be brave and save!”

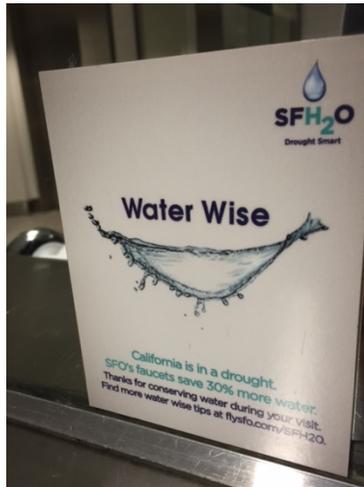
- ✓ Create a poster monitoring the water use for the school. Compare water used per month to your baseline data, and let the school know whether they have reduced water use or not.
 - In the school energy monitoring example below, all papers are attached to the poster board with Velcro to make it easy to change them each month as necessary. The papers with usage data are laminated and written on with dry erase marker each month, as is the graph paper. You can do the same thing for water!



⁷ Image created by SEI

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- ✓ Install shower-timers inside the locker rooms.
 - Check with your local utility to see if they provide free shower timers. Or, hold a donation drive to raise money to purchase shower timers.
- ✓ Make signs for each classroom to place by the sinks that remind people to save water and make not let the water run or drip.
 - Signage ideas are provided below
- ✓ Create a video educating the student body on how to save water at home or at school,
 - For example, see these videos on a schools' energy conservation:
 - Dixie Elementary School: <http://www.youtube.com/watch?v=FEYeVAUosUc>
 - Redwood High School: <https://www.youtube.com/watch?v=8lxuEfcBQHE>
- ✓ Place a sign in the staff room, asking teachers to use the dishwasher if there is one available. If the office has a water dispenser, place a sign next to it asking people to only pour as much water as they will drink.



- ✓ Have a movie night! Get permission to set up a projector in a classroom or the school auditorium and hold an evening movie screening of one of the many films on water crises and controversies.
 - For ideas, check out the movies on this site: <http://www.watercache.com/blog/2011/10/must-see-water-documentaries-provide-insight-into-future-water-crisis/>
- ✓ Ask facilities to place aerators on water faucets (described below in Water Resource Reduction Projects)
- ✓ Test toilets for leaks and inform facilities of leaking fixtures
- ✓ Ask facilities to adjust the irrigation system. Use this CA lawn watering guide to calculate how many minutes a week your school's lawns should be watered:

⁸ Images created by SEI.

- <http://ucanr.edu/files/47995.pdf>
- ✓ Encourage school administration to install low-flow fixtures and insulate hot water pipes
- ✓ Complete a water-wise landscaping, rain-garden, rain catchment, or grey-water project (described below)

Encourage

- ✓ Invite students and staff to pledge to conserve water using the Water Pledges below. Putting a commitment in writing helps people achieve their conservation goals.

Sample Resources

- The next few pages provide resources for a few specific strategies your green team may choose to implement. Check out the list below and visit the corresponding page for a strategy your team is interested in!
 - Monthly Themes: Pick one area to focus on each month. This can help to keep your whole school engaged in your conservation work.
 - Water Monitors: Water monitors can be students who patrol the campus looking for leaks and best practices that a school can work on implementing.
 - Pledges: Ask students and teachers to complete a pledge to save water in your school.
 - Signage: Spread awareness through different posters about saving water.
 - Door Hangers: Use these to reward teachers who are doing a great job saving water or to remind people to practice water saving habits.