



Appendix 3.b EECCOA Water Challenge

Project Builder Workbook

January 2024

About the EECCOA Challenge: This challenge provides students the opportunity to research, design and implement sustainability project proposals to reduce their school's utilities costs as well as the school's environmental footprint. This document was created with the intention to help students' teams develop and potentially implement projects focusing on reducing the water usage at your school campus. We hope you are up for the challenge!

The MERITO Foundation, sponsors and partners will award cash or in kind prizes to the students authors of the best 3 projects for each tier (energy efficiency, water conservation, waste reduction, or outreach regarding the Matilija Dam removal) in the spring of 2024, and will match funds to participating schools for part of the implementation costs of the most cost-effective project proposals.

This project builder workbook is for **WATER CONSERVATION tier**: To design and propose a tangible method to reduce the potable water use of your school campus,

The deadline to turn in your project proposal to your teacher is _____

EECCOA Challenge Award Ceremony is scheduled for Monday, May 20, 2024

Below are the challenge guidelines to help you develop your project proposals in **6 STEPS** and worksheets to help you outline your project idea and methods.

STEP 1. Create a TEAM (5 Points): Your team must consist of minimum 3 and maximum 5 students. Include the name of your team, the name of your project, names of your team members, school, grade, your teacher's name. Fill in box below to start a project draft.

Team name:	
Project proposal name:	
Tier (Project Goal)	To reduce the water consumption on my school campus
Team members names:	
School name:	
Grade:	
Teacher's name	

STEP 2. Conduct a WATER ASSESSMENT (also known as water audit) of your school campus (20 possible points). To conduct a water audit follow the guidelines on lesson 2-9 of the EECCOA Activity Guide titled 'MERITO Foundation's School Water Assessment' (your teacher has a copy), or the summarized version in page 2 below. The audit helps assess how much water is used indoors (faucets, toilets, urinals and showers), and outdoors (in irrigation, fountains, pools, etc) at your school. You should also include the records from your school's water bill to make a good case for your proposal. Look at the records and find patterns such as months when more water is used year after year, or within a year. Proposals that show



graphs of the data with averages, maximum and minimum water usage receive extra points. The Water Audit of your school will help you assess the present condition and gain a reference value to work with. The audit will also allow you to estimate the changes resulting from your project's implementation. Enter in box below any information you have about water usage in your school campus:

A. School Buildings general water usage	Cubic Gallons of water or \$
Total gallons of water used by your school in last 12 months	
Month of highest water usage (cubic gallons or amount paid)	
Month of lowest water usage (cubic gallons or amount paid)	
How many students and staff at your school?	
B. Indoor water usage	Gallons Per Minute (GPM) or Gallons per Flush (GPF)
Average classroom's water usage (faucets) in gallons /minute (GPM)	
Average bathrooms water usage (faucets) in GPM	
Average bathrooms water usage (toilets) in GPF	
Average bathrooms water usage (Urinals) in GPF	
Average bathrooms water usage (Showers) in GPM	
Are there any of the above leaking? If yes, how many? And how many GPM	
C. School grounds	How many?
# of water faucets outside the buildings	
# of outdoor faucets leaking	
# of rain or drought tolerant gardens	
# of gutters or downspouts	
# of rain barrels	
# of water meters at the school	
Any slopes in the outdoor areas where water accumulated when it rains? If yes, write where in the school	
Are there any areas where water accumulates when it rains? Puddles? Where?	
D. Outdoor irrigation	Square feet / time
Square footage of lawn area irrigated by sprinklers	
How many times per week is this area of lawn irrigated by sprinklers?	
For how long? (how many minutes)	
Square footage of lawn area irrigated by drip	
How many times per week is this lawn area irrigated by drip?	
Square footage of lawn area not irrigated at all	
What sections of the lawn areas in the school are not used by students for playing or resting?	
Square footage of planters?	
Are planters irrigated? If yes, how (sprinklers, drip, describe)	



STEP 3. Choose your project objective(s) 'THE WHAT': (15 possible points)

Now that you have an assessment of the water use at your school and understand the present condition, ask yourself, **What do you want to modify; 'How much water can we save?; By when? Then ask yourself, is it doable? The answers to these questions in one or a few sentences are your objectives.** Your project proposal can have one or multiple objectives and must be specific and realistic.

Examples of objectives:

- To reduce water usage X cubic gallons per month by converting % of school lawn area into a native plant garden by month/year;
- To reduce the water usage X cubic gallons per month by changing the shower heads to X type, or toilets type X to type Y, or faucets for X type by Z;
- To reduce the water consumption of the water usage in our school by X% by X time by making this X,Y or Z fixtures to avoid N identified leaks

In summary, to write your objectives be specific on what you want to change, how much and by when. These are called SMART Objectives!

SMART Objectives:	Are one or two sentences that say what you want to modify. They are Specific ; They are also Measurable . That is, they say how much water is consumed and you propose to reduce and in what unit (cubic gallons, cubic feet?); Are Attainable (Is it doable? Can it be done?); Are they Relevant to the goal of reducing water consumption ? And are Time bound. That is, if the proposal is to be implemented, by when?
#1	
#2	

NOTE: Your project can have one or multiple SMART objectives.

STEP 4. Design your project's METHODS. This is 'THE HOW' (25 possible points)

The project methods are **how** your team proposes to reach your project goal to reduce the water consumption assessed in STEP 2, to make the specific change of what, how much and by when (as described in your objectives in STEP 3). Now think and describe HOW (step-by-step) you propose to make the change(s) happen. Provide as much detail as possible about your recommended approach, methods, materials, and costs. Including a budget is very important!

Project A example:

Sample Goal: *To reduce the school's water consumption*

Sample Objective: *Reduce X gallons of water to school X by harvesting rainwater through the installation of rain barrels by months/year.*



Sample methods:

- Calculate how much water rain barrels store per month, quarter, semester (costs). How much money does using water in rain barrels save to the school (savings) and deduct from the school's water bill as reported by your school custodian or administrator.
- Show where to install the barrels in the school by creating a layout diagram of school campus indicating positioning of the barrels.
- Call supplies stores and calculate the cost of barrels, how much cost of installation and connection to irrigation system, etc
- Be as specific as possible in your methods. You may want to include materials and supplies needed, estimated costs, estimated costs of installation, where to buy materials...
- Create a campaign to build awareness of water consumption on campus using social media, flyers, Earth Day booth, etc

Note the above example is not the best for water conservation in Southern California due to our low rainfall rate, however, the methodology is a good example.

Write in the table below the methods you propose in your project. Be as detailed as possible.

Method	Cost (\$) of change	Save in GPF or GPM and \$
Example: Change cafeteria faucets for more efficient (less GPM)	\$180 x 5 faucets that use 1 GPM	0.3 GPM x 25 students use/day x 5 faucets = 37.5 gallons during lunch hour

Note: HCF = Hundred Cubic Feet of Water = 748 gallons of water

STEP 5. Figure out how to measure your project's effectiveness. This is called project EVALUATION (10 possible points)

This is where you describe how to determine the success impact of your project proposal after it is carried out. Imagine it happens and all that you propose is conducted. How would you measure the changes (from your proposed actions (the methods in STEP 4).

Example:

	Write here how you would be able to see or measure that the water usage in the school is reduced after implementing your proposed ideas
Examples of evaluation measures	-We will know our proposal works by seeing a reduction of X% in water bill of the school every month -We will measure the GMP of the faucets changed by our proposal, and they will waste X less GPM



Write your evaluation measures here	
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You can have more than one evaluation measure, and more than one may be more reliable and convincing of the value of your proposal.

STEP 6. Outline a COMMUNICATION plan for your proposal to let others know of your project, actions, or to persuade your audience to change certain behaviors (25 possible points maximum). Examples:

- Present your proposal at a meeting of your school district's board, a City Council meeting or a PTA meeting of your school (25 points)
- Create a website, newsletter article, Face Books account (10-15 points)
- Indicate you will report the Average Gallons per month used and money savings to your fellow schoolmates, teachers and administration every month (10 points)

	Write here how would you inform your community (school campus, or all of Ventura) about the success of your projects (when implemented)
Method #1:	
Method #2:	

You do not need to reinvent the wheel! Below are on-line resources with examples or for inspiration.

Create a Native Plant Garden - <https://youtu.be/JFhuvgWEvMI>

Check our other EECCOA students' projects winners of prizes at

<https://meritostaff.wixsite.com/eeccoachallenge/2023-winners-and-their-projects>

or <https://www.youtube.com/user/MERITOAcademy/playlists>

PROJECT PROPOSAL FORMAT: The project proposals should be presented as verbal (oral) presentation using Power Point or Sway. Presentations must last 5 minutes maximum per team. Submit the ppt or pdf to your teacher on the date provided by her/him/them. We will collect all proposals in pdf or ppt by email or in USB drive from teachers. Students can produce their own videos if they want and are encouraged. 5 extra points for teams who record their own video and embed the slides into the video. A successful project proposal needs to include all 6 steps described. This how much each step is worth:

1. Project summary with name of team, project title, authors (students names), school name, and teacher's name: 5 points
2. Assessment/audit results: 20 points
3. Objective(s): 15 points
4. Methods (including any costs and budgets): 25 points
5. Evaluation method(s): 10 points
6. Communication plan: 25 points

For guidance or use of water audit materials, please contact info@meritofoundation.org