



# EECCOA Water Challenge

## Project Builder Workbook

January 2021

**About the EECCOA Challenge:** This challenge provides students the opportunity to research, design and implement sustainability project proposals to reduce their home's utility costs as well as their environmental footprint. This document was created with the intention to help students or teams develop and potentially implement projects focusing on reducing the water usage at your home. 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 ocean acidification) in the Spring of 2021, and might include funds, gifts, or additional support to help with the implementation of the most cost-effective project proposals.

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

The deadline to submit your project proposal is **April 9, 2021**

EECCOA Virtual Challenge & Award Ceremony is: **April 30, 2021**

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. The more your project proposal becomes an executed project, the more points you will receive, and you will have a better chance to win.

You will find additional links to information and resources in the last page of this document.

**STEP 1. Project and Student Name (5 Points):** For the EECCOA Virtual Challenge 2021, you will be working on project proposals for water conservation in your home, so you will be allowed to submit a project proposal as an individual. Fill in the box below to start your project proposal.

Before you get started, check out this introductory video on the EECCOA Challenge and the resources available to you online:

<https://www.youtube.com/watch?v=Lh2e4T4LX2M&list=PLy8PMsb7nt-tvQbUjp2iMfuMu8cSha2KS>

Student Name:	
Project proposal name:	
Tier (Project Goal)	<b>To reduce the water consumption in my home</b>
School name:	
Grade:	
Teacher's name	



**STEP 2. Conduct a WATER ASSESSMENT (also known as water audit) of your home (20 possible points).** To conduct a water audit, complete the “Home Water Assessment” worksheet (provided by your teacher) and summarize it in the table below. The audit helps assess how much water is used indoors (faucets, toilets, and showers), and outdoors (in irrigation, fountains, pools, etc) at your home. You should also include the records from your household water bill to make a good case financially 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 home 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:

If you need help organizing and visualizing your data, watch this short tutorial on the topic (move ahead to 0:58 second to skip the intro):

<https://www.youtube.com/watch?v=2DTt5bhvnTw&list=PLy8PMsb7nt-tvQbUjp2iMfuMu8cSha2KS&index=5>

<b>A. General water usage</b>	Gallons of water or \$  (Reminder: convert HCF to gallons)
Total gallons of water used in last 12 months	
Month of highest water usage (gallons or amount paid)	
Month of lowest water usage (gallons or amount paid)	
How many people are in your household?	
<b>B. Indoor water usage</b>	Gallons Per Minute (GPM) or Gallons per Flush (GPF)
Kitchen’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 (Showers) in GPM	
Are there any of the above leaking? If yes, how many? And how many GPM	
<b>C. School grounds</b>	How many?
# of outdoor faucets leaking	
# of rain or drought tolerant gardens	
# of gutters or downspouts	
# of rain barrels	
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?	
<b>D. Outdoor irrigation</b>	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': (20 possible points)

Now that you have an assessment of the water use of your home 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 SMART objectives.** Your project proposal can have one or multiple objectives, it just needs to be specific and realistic.

This tutorial walks you through writing a SMART objective (*move ahead to 0:58 second to skip the intro*): <https://www.youtube.com/watch?v=8yS3yUM4or4&list=PLy8PMsb7nt-tvQbUjp2iMfuMu8cSha2KS&index=2>

#### Examples of SMART objectives:

- To reduce water usage X cubic gallons per month by converting % of the 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 <b>Specific</b> ; They are also <b>Measurable</b> . That is they say how much water is consumed and you propose to reduce and in what unit (cubic gallons, cubic feet?); Are <b>Attainable</b> (Is it doable? Can it be done?); Are <b>Relevant</b> to the goal of reducing <b>water consumption</b> ? And are <b>Time</b> 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 is how you or 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 mo/year.*

##### **Sample methods:**

- Calculate how much water rain barrels store per month, or year (amount of water saved). How much money will using water in rain barrels save your household (money savings), and deduct from your house's water bill.
- Show where to install the barrels in your garden by creating a layout diagram of it indicating the position of the barrels. How many do you need?
- Call supplies stores and calculate the cost of barrels, how much cost of installation and connection to the irrigation system, etc. Are there any rebates or initiatives in your city to help with the cost?
- 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 in your community using social media, flyers, neighborhood connection apps, 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.

For help and more examples for this step, go to (*move ahead to 0:58 second to skip the intro*):

<https://www.youtube.com/watch?v=05IUoYpcoA0&list=PLy8PMsb7nt-tvQbUjp2iMfuMu8cSha2KS&index=3>

**In the table below, write the methods you propose for your project designed and implemented. Be as detailed as possible.**

Step	Cost (\$) of change	Save in GPF or GPM and \$
Example: Change bathroom faucets for more efficient (less GPM)	\$180 x 3 faucets that use 1 GPM	0.3 GPM x 5 family members use/day x 3 faucets = 4.5 gallons a day



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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 (15 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, that all you propose is implemented. How would you measure the changes that result from your proposed actions in the methods (STEP 4).

In the first part of this video, you can learn more about ways you can evaluate the success of your methods (move ahead to 0:58 second to skip the intro):

<https://www.youtube.com/watch?v=5RO5xcvfWk8&list=PLy8PMsb7nt-tvQbUjp2iMfuMu8cSha2KS&index=4>

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

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, community, or household members to change certain behaviors (15 possible points maximum).**

Examples:

- Open a group chat to share information or share in social media
- Apply for a Ventura Water rebate or incentive program:  
<https://www.cityofventura.ca.gov/889/Rebates-Incentives>
- Create a website, newsletter article, Facebook account, use apps to communicate with other students, neighbors, etc. (10-15 points)
- Indicate you will report the Average Gallons per month used and money savings to your family (10 points)

Check out this video tutorial for more details and examples (this section start at minute 2:00):

<https://www.youtube.com/watch?v=5RO5xcvfWk8&list=PLy8PMsb7nt-tvQbUjp2iMfuMu8cSha2KS&index=4>



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

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

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

Water conservation: <http://www.greenschoolsalliance.org/page/water-conservation>

Unique green projects: <http://www.greenschoolsalliance.org/green-journal-articles#2>

Check our other EECCOA Challenge winning projects at:

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

**PROJECT PROPOSAL FORMAT:** The project proposals should be submitted by using PowerPoint, Sway, or Google Drive to create a presentation that includes all the steps from this project builder as well as images to enhance your proposal. Submit the ppt or pdf to your teacher on the date provided by her/him/them. Students are encouraged to produce their own videos explaining their proposals. This is an opportunity to explain to judges what you are proposing and use visuals to help them understand. You can get up to 5 extra points for recording your own video. TIP: 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): 20 points
4. Methods (including any costs and budgets): 25 points
5. Evaluation method(s): 15 points
6. Communication plan: 15 points

**For guidance on the use of water audit materials, please contact [info@meritofoundation.org](mailto:info@meritofoundation.org)**