

WATER TOWER SHOWDOWN

Teacher Guide

American Water Works Association
Virginia Section

Bedford Regional Water Authority

Lynchburg Water Resources

Salem Water Department

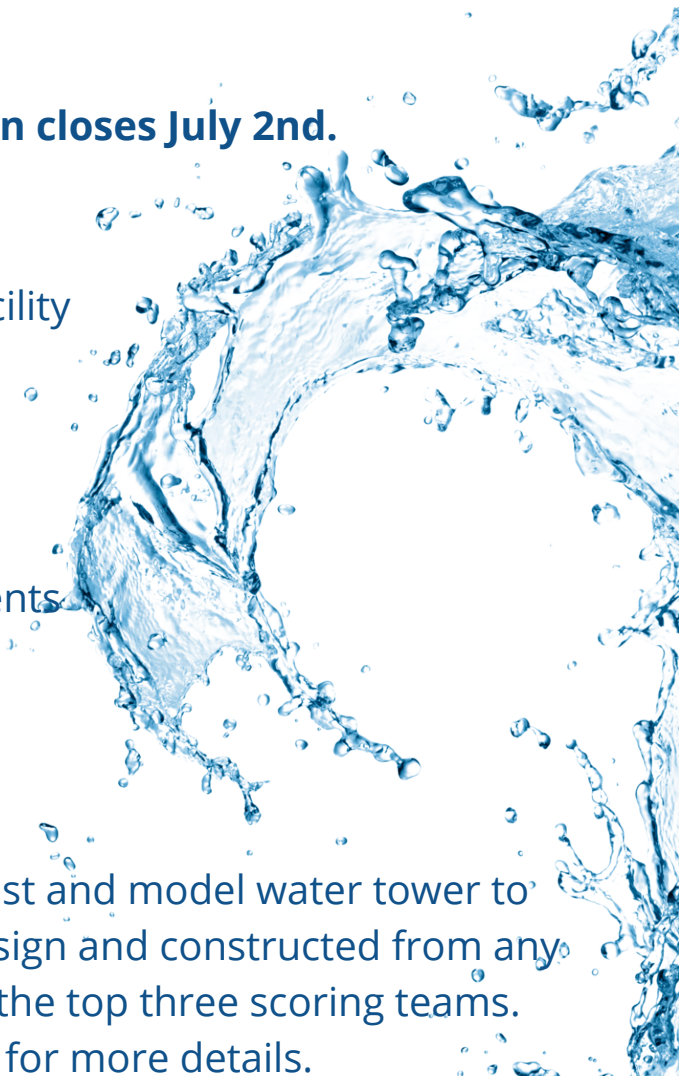
Western Virginia Water Authority

PROJECT OVERVIEW

When

Friday, July 17th
9:30 am to Noon

There is no cost to compete. Registration closes July 2nd.



Where

Smith Mountain Lake Water Treatment Facility
1500 Radford Church Road
Moneta, VA 24121

Who

The competition is for middle school students (individuals or teams up to 4) in the Roanoke/Bedford/Lynchburg region.

What

Teams must bring a completed materials list and model water tower to the competition. Towers may be of any design and constructed from any materials. Cash prizes will be awarded for the top three scoring teams. Review full rules and guidelines document for more details.

Contact and Registration

To register teams or find rules and more information, visit:
www.vaawwa.org/events/watertowershowdown2026
For questions, concerns, or interest in extra resources, contact Lilly Meighan at lilly.meighan@westernvawater.org

Competition Overview

Middle school students will design, build, and test a model water tower. Towers will be built prior to competition day and are evaluated and tested by qualified judges on competition day. There is no cost to enter. For full competition rules and requirements, visit www.vaawwa.org/events/watertowershowdown2026

VA SOL Correlations

2018 Science 6.1, LS.1, PS.1, 6.9, LS.8, LS.9
2018 Math 6.5, 6.6, 7.2, 7.3, 7.4, 8.4, 8.8
2023 Math 6.CE.1, 6.MG.1, 7.CE.1, 7.PS.1, 7.PS.2, 8.PS.1, 8.MG.2

Recommended Supplies

- 3/8" diameter connector
  - This is the only REQUIRED material. Two brands of connectors are allowed SharkBite 3/8 in. O.D. x 3/8 in. O.D. Quick Connect Elbow (Model No. 25431Z) or John Guest 3/8 in. O.D. Polypropylene Push-to-Connect Elbow (Model No. 803369)
  - Contact the competition coordinator if you have questions or concerns about purchasing this item.
  - If this is a barrier for your school, the connector may be able to be provided to you.
- Recycled materials (wooden, metal, and plastic recyclables work best)
- Pipe or tubing
- Paint, markers, decorative items
- Printed student design journals

Sample Project Timelines

5 Day Timeline

Day	Activity	Student Tasks
1	Project Introduction (Student journal pages 1-9)	• Read competition rules and criteria • Create team groups • Review project tasks
2	Brainstorm, Research, Plan (Student journal pages 10-12)	• Read background information about water towers • Brainstorm material list and tower design • Create final tower design with dimensions
3	Plan and Design Water Tower (Student journal pages 13 & 15)	• Finalize tower design • Complete materials list form
4	Build (Student journal page 14)	• Build model water tower
5	Build, test, improve, communicate (Student journal pages 16-19)	• Check model water tower for all requirements and criteria • Make improvements as necessary • Prepare communication for competition

10 Day Timeline

Day	Activity	Student Tasks
1	Project Introduction (Student journal pages 2-3)	• Introduce competition • Create team groups • Review project tasks
2	Brainstorm & Research (Student journal pages 4-9)	• Read competition criteria and requirements • Read background information about water towers
3	Design/Plan (Student journal page 13)	• Brainstorm material list and tower design
4	Design/Plan (Student journal page 13)	• Finalize tower design with dimensions • Complete materials list form
5	Research/Visit	• Visit and tour a local water treatment plant
6	Build (Student journal page 14)	• Build model water tower
7	Build (Student journal page 14)	• Build model water tower
8	Test (Student journal pages 16 & 17)	• Check model water tower for all requirements and criteria
9	Improve and Test (Student journal page 18)	• Check model water tower for all requirements and criteria • Make improvements as necessary
10	Communicate (Student journal page 19)	• Complete final touches on water tower • Prepare for presentation and communication at competition

What to expect on Competition Day

When you arrive, teams will check in by school and team name. Be sure to provide release forms for each student at check in. The teams will be directed to a staging area with their towers. Students will then rotate through 4 different judging stations (structural efficiency, cost efficiency, design ingenuity, and hydraulic efficiency). *Students must carry their own towers from station to station, and judges are not able to assist.* All towers will be judged on hydraulic efficiency last to minimize any possible damage to the tower during judging.

Judges are volunteers from local water utilities (engineers, plant operators, etc.) Judges may ask students questions about their design process and experience. Students should be prepared to have casual conversations about their tower, design, and functions. Once all teams have rotated through all judging stations, teams will be invited to tour the Green Ridge Water Tower while scores are being calculated. Light refreshments will be provided, but you are welcome (and encouraged) to bring snacks and drinks for your teams.

After the scores are compiled, the winners of the competition will be announced. Prizes will be awarded to the top three scoring teams, with a top prize of a $75 Visa gift card for each member of the first place team, a $50 gift card for each member of the second place team, and a $25 gift card for each member of the third place team.

Competition Day checklist

- Participant Release Form for each student (page 6 of offical rules document)
- Model water towers for each team with required 3/8 in. connector
- Materials list for each team
- Accompanying receipts for each team (donated materials must have receipts)

Local Resources

In-class lessons and resources are prepared to be shared by Bedford Regional Water Authority, Lynchburg Water Resources, and Western Virginia Water Authority. Representatives from these organizations may visit your classroom to answer questions on the competition, talk to students about future careers, or present other water curriculum (watersheds, water cycle, properties of water). You can also reach out to these organizations to arrange tours of local water treatment plants to provide further context to the project.

Bedford Regional Water Authority
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Lynchburg Water Resources
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Western Virginia Water Authority
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Other Resources

Smithsonian Science Water Works- Series of short stories focused on water usage with a focus on science and engineering
https://ssec.si.edu/water-works

Water 2050 - Digital game app where gamers must create a sustainable water use city
https://www.water2050.com/

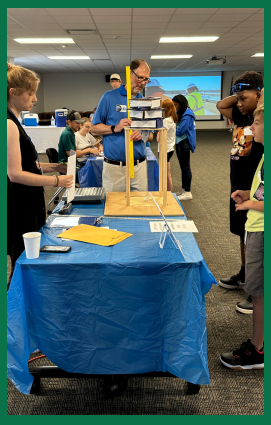
Project WET Discover Water - Virtual learning resource on water usage, water cycle, and watersheds
https://www.discoverwater.org/

Melbourne Urban Water Game - Online game where gamers travel through an urban water system
https://www.educationsoutheastwater.com.au/resources/melbourne-water-cycle-game









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