VIRGINIA SECTION
American Water Works Association

Model Water Tower Competition 2026

General Information

The 11th Annual Model Water Tower Competition (MWTC) in the Tidewater area will be held as follows:

- *What:* The challenge is to build a **structurally efficient model water tower that holds water** and can be filled and drained quickly, while also being cost efficient and aesthetically pleasing.

- *When:* **Saturday, November 7, 2026** from **9:00 a.m. to 12:00 p.m**. Check-in between 9:00 a.m. and 9:30 a.m.

- *Where:* **City of Virginia Beach Department of Public Utilities, 3500 Dam Neck Road, Virginia Beach, VA 23453**

- *Who:* The MWTC is for **middle school students (teams of 1 to 4)** in the Tidewater region from public, private, or home schools.

- *Registration deadline:* **Friday, October 16, 2026**. To register, please email Mark Titcomb at mtitcomb@nnva.gov with the team name, students' names, and contact email and phone number for each team entering the competition. Only the first 30 registered teams will be accepted. There will be a limit of no more than 5 teams per school.

- There is no cost to enter. To participate, you must register by **October 16, 2026** and arrive at the check-in on **November 7, 2026** with the following materials (one set of forms for each team):

    - Bring your completed **Registration** - a blank form is attached.

    - Bring your completed **Participant Release Forms (one for each student)** - a blank form is attached.

    - Bring your completed **Materials List** - a blank form is attached.

    - Bring your completed **Model Water Tower**.

- Model water towers may be of any design and constructed from any materials. In fact, you will be rewarded for using **creative designs** and **innovative materials**. Creative designs mean the water tower will function even though it does not look like any other tower. Innovative materials may have been used for something else at one time – an old broom handle used for support, for instance. Due to facility constraints, **we cannot supply electricity to towers**.

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Objective

The objective of the competition is to make participants aware of the importance of **reliable drinking water** and the rewarding opportunities available in the **water profession**. The competition achieves this by having students develop an idea into a functioning water tower, just like water professionals do in the real world!

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, $50 gift card for the second place team, and $25 gift card for the third place team**. The lowest scores win. Judges' decision is final.

Judging

Judging will be based on **four criteria**:

- **Structural Efficiency**
- **Hydraulic Efficiency**
- **Cost Efficiency**
- **Design Ingenuity**

Understand and achieve these criteria to do well! They are explained below.

Structural Efficiency

Structural efficiency is calculated by **dividing** the weight of the model when it is empty by the average height of the tank **times** the amount of water it holds. The lower this number, the better.

This is shown with the following formula:

$$Structural\ \ Efficiency = \frac{Weight\ \ of\ \ the\ \ tower\ \ when\ \ empty\ \ (pounds)}{Average\ \ tank\ \ height\ \ (ft) \times Amount\ \ of\ \ water\ \ the\ \ model\ \ holds\ \ (gal)}$$

This criterion is similar to what engineers use in the real world! Remember, the **tank must be between 1.5 feet and 2.5 feet high**.

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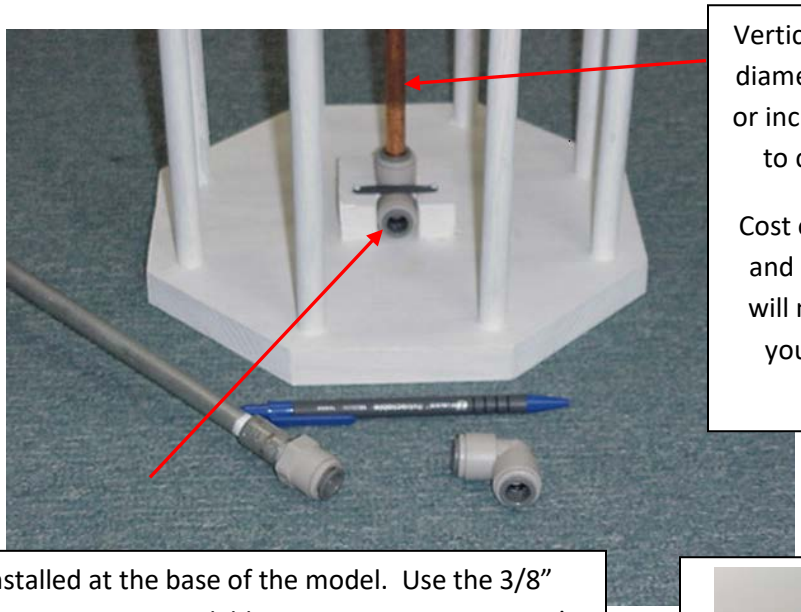
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Hydraulic Efficiency

Hydraulic efficiency is the amount of **time it takes** the judges to fill the model with 1 gallon of water and drain it back out again. The judges will fill the tank through the **3/8" diameter connector**. The less time it takes to fill and drain the tank through the connector, the better.

Model Water Tower Connector

A proper 3/8" diameter push-on connector must be used by all registered contestants. Connectors must be 3/8" O.D. on the pump connection side. 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). Connectors are available at both Lowe's and Home Depot for approximately $6.00. The cost of the connector and the riser pipe will be deducted from the total cost to construct, so it will not affect your "Cost Efficiency" score. You must use one of the connectors specified to avoid a penalty. Contact Mark Titcomb or Shirley Smith (information provided below) if you need additional information about the connector.



Vertical tube may be any diameter - use a reducer or increaser as necessary to change tube size.

Cost of the vertical tube and increaser/reducer will not count towards your Cost Efficiency score.

Connector must be installed at the base of the model. Use the 3/8" diameter connector. Connectors are available at Home Depot or Lowe's.

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) Either of the two are acceptable.

Make sure that the model numbers on the connector match, and it looks like the connector in the picture.



Connector should look like the above picture and allow for a 3/8" outer diameter tube to connect.

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Cost Efficiency

Cost efficiency measures your ability to save money while building your model. **Bring receipts** for all items purchased for your model. Points will be assigned as follows (the lower the score the better):

$0.00 - $5.00	1 pt
$5.01 - $10.00	2 pt
$10.01 - $15.00	3 pt
$15.01 - $20.00	4 pt
More than $20.00	5 pt

List all items used in your model and their costs on the **Materials List Form**. Where recycled items are used, put the letter "R" in the cost column. You may use as many recycled materials as you wish. A penalty of 1 pt will be given for each missing receipt for items purchased new. No receipt is necessary for recycled items. Note: **Donated items will still count towards total cost and will require receipts or they will be subject to the 1 pt penalty.**

Design Ingenuity

Ingenuity (in · ge · nu · i · ty) is how much **imagination and skill** were used in your model. Water professionals must often use ingenuity; they use skill and imagination to solve difficult problems. The judges will look at several items:

- Craftsmanship (is the model sturdy, and do the parts fit together nicely)?
- Imagination (are the design or materials unique)?
- Artistic merit (does the model have creative ideas, colors, or themes)?

Penalties

Keep to the following standards when designing and constructing your model. **Penalties will be assessed for not following the standards below.** These standards are demonstrated in the diagram on the following page.

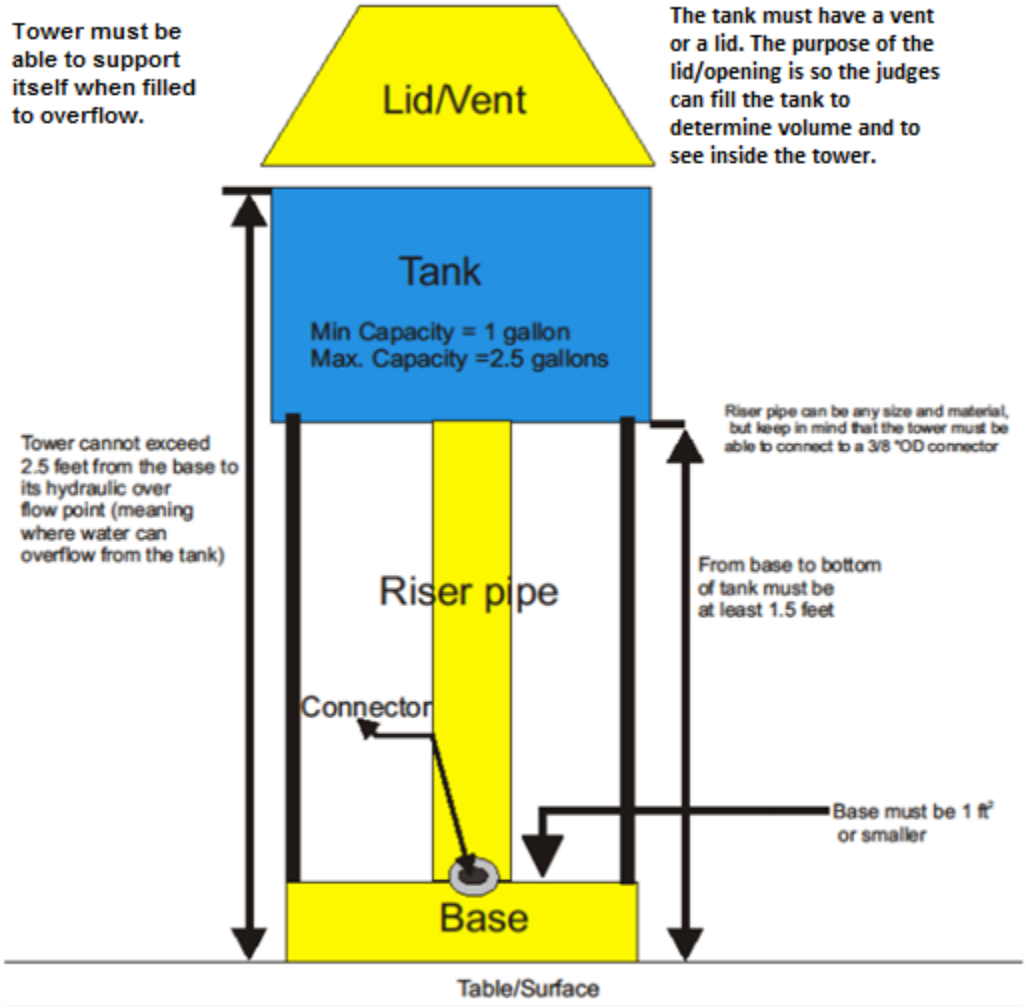
- The base of the model must fit in a square **1 foot on each side**.
- The tank must be **between 1.5 and 2.5 feet high**.
- The tank must have a **vent or removable lid large enough to place a funnel through** so the judges can fill the tank and tell when it is full.
- When full, the tank must **hold between 1 and 2.5 gallons** of water and it **should not leak**. (Hint: test your model to make sure.)
- Towers **must be able to support themselves** when filled to overflow with no outside support.
- The model must use one of the **3/8" diameter connectors** as specified.
- **Bring receipts** for all materials purchased for your model. A one point penalty will be given for each item not having a receipt. (Reminder: recycled items have no cost associated with them and do not require a receipt but cost of donated items still counts towards total and donated items still require a receipt).
- **Electricity will not be supplied to your tower.**

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MWTC Requirements



Additional notes:
Your Model must be an elevated tank design including a riser pipe, a tank, a supporting structure to hold the tank and a base.

The Maximum and minimum volume requirements INCLUDE the storage in your riser pipe.

The maximum 2.5 feet height refers to the length from the base to the hydraulic height (ie the overflow height).

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Additional Information

For more information please contact the event organizers as follows:

Shirley Smith
SLSmith@hrsd.com

Mark Titcomb
mtitcomb@nnva.gov

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Registration

Complete this form and bring with it you to the check-in.

Team Name: _____

School: _____

Teacher or Advisor: _____

_____

List the names of your team members below. Teams may have from 1 to 4 members.

Name*	Grade	Telephone #

***Each team member must bring a signed Participant Release Form.**

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Participant Release Form

INSTRUCTIONS: Each team member must bring a copy of this form signed by their parent or guardian.

I AM THE PARENT/GUARDIAN OF _____.

I HEREBY AUTHORIZE THE MEMBERS OF THE MODEL WATER TOWER COMPETITION COMMITTEE, A SPECIAL PROJECT OF THE VIRGINIA AMERICAN WATERWORKS ASSOCIATION-STUDENT ACTIVITIES COMMITTEE, TO:

1. PREPARE ANY PROMOTIONAL MATERIAL SUCH AS PRESENTATIONS, SLIDE SHOWS, VIDEO TAPES, PHOTOGRAPHS, AND MOVIE FILMS IN WHICH MY CHILD WILL SPEAK AND/OR APPEAR.

2. USE, REUSE, PUBLISH, AND REPUBLISH THE SAME IN THE WHOLE OR IN PART INDIVIDUALLY OR IN CONJUNCTION WITH OTHER PHOTOGRAPHS, VIDEO, OR FILM IN ANY MEDIUM FOR ANY PURPOSES WHOSOEVER, INCLUDING (BUT NOT BY WAY OF LIMITATION) ILLUSTRATION, PROMOTION, AND ADVERTISING BY THE COMMITTEE.

I HEREBY WAIVE ANY MONETARY RIGHTS OR OTHER RIGHTS THAT I MAY HAVE TO INSPECT AND/OR TO APPROVE THE FINISHED PRODUCT OR THE ADVERTISING COPY THAT MAY BE USED IN CONNECTION THEREWITH OR THE USE TO WHICH IT MAY BE APPLIED. I UNDERSTAND AND AGREE THAT ALL RIGHTS, ROYALTIES, AND MATERIALS WILL BELONG TO THE COMMITTEE.

Parent/Guardian (Print Full Name)_____

Parent/Guardian (Signature)_____

Date_____ Phone #_____

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Materials List Form

Team Name: _____

Participants: _____

Complete and bring this form and all receipts on the day of the contest. List the materials and costs used to construct your model water tower. Put an 'R' in the cost column where recycled materials are used. Use additional sheets if necessary to list all materials. A penalty will be given for not bringing this form and required receipts. Donated items still require receipts and count towards total.

MATERIAL	**COST**
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
TOTAL	_____