# 2026-2027 PennDOT Innovations Challenge

## Challenge Topic

Pennsylvania's transportation network includes thousands of bridges and tunnels that safely connect communities every day. However, many of these structures were built decades ago, when commercial vehicles, recreational vehicles (RVs), and truck trailers were significantly smaller than they are today. As vehicles have grown taller, the risk of overheight vehicles striking low-clearance bridges and tunnels has increased.

In recent years, more than **600 Pennsylvania bridges** were struck by overheight vehicles, including multiple incidents along Interstate 90 in Erie County. More recently, an overheight truck struck the entrance to the Fort Pitt Tunnel, causing traffic delays and temporary tunnel closures while crews inspected the structure for damage. Even when these incidents cause only minor damage, they often result in lane closures, traffic congestion, emergency response, expensive repairs, and disruptions for businesses, schools, emergency services, and the traveling public.

## Your Challenge

Develop an innovative solution that helps prevent overheight vehicles from striking Pennsylvania's bridges and tunnels. Your proposal should focus on identifying potential hazards before a collision occurs while improving safety, protecting infrastructure, and minimizing disruptions to travelers and local communities.

**Note**: Proposed solutions must outline a new concept that has not been used or tested in Pennsylvania, or other states.

Questions to consider:

- How can technology better alert drivers before they reach a low-clearance bridge or tunnel?
- How can artificial intelligence, sensors, connected vehicles, or smart infrastructure help prevent overheight strikes?
- How can navigation systems provide more accurate routing for oversized vehicles?
- Are there new roadway designs, warning systems, or communication methods that would better capture a driver's attention?
- What role should education, commercial driver training, enforcement, or penalties play in preventing bridge and tunnel strikes?
- How can your solution be practical, cost-effective, and adaptable across Pennsylvania's transportation network?

Teams are encouraged to think creatively and explore solutions that combine engineering, technology, infrastructure, education, behavioral science, data analytics, or public policy. Your proposal should clearly explain how your innovation will reduce bridge and tunnel strikes, improve safety, protect Pennsylvania's transportation infrastructure, and minimize the economic impacts caused by roadway closures and emergency repairs.

Every bridge and tunnel strike is preventable. Your innovative idea could help protect lives, preserve critical infrastructure, and keep Pennsylvania moving safely.

## Your Award

The statewide winning team will be chosen from among regional winning teams across the state. Each PennDOT regional office's winning team members will receive certificates. The regional winners will be invited to present their innovative solutions to the PennDOT Secretary and a panel of judges, who will determine the statewide winner. The statewide winning team members will receive certificates, and their school will receive a traveling trophy and permanent trophy engraved with the school's name.

In addition, PennDOT is partnering with several organizations to provide a monetary award to the statewide winning team to be announced on the Innovations Challenge webpage later. These organizations include:

- Transportation Policy and Education Foundation, an educational arm of the Associated Pennsylvania Constructors (APC);
- American Council of Engineering Companies of PA (ACEC/PA);
- Mid-Atlantic Section of the Institute of Transportation Engineers (MASITE); and
- Intelligent Transportation Society of Pennsylvania (ITSPA).

Think you have an innovative solution? Give the PennDOT Innovations Challenge your best effort!

## Project & Submission Guidelines

Students must work together in teams **(minimum of two up to a maximum of four individuals)** to develop their innovative solution that addresses the identified challenge.

To enter the challenge, teams must complete the PennDOT Innovations Challenge Submission Form, which includes attaching a description of **no more than 750 words** outlining the innovative solution and its benefits. **Note**: Each team must identify a faculty adviser who will need to submit the form on the team's behalf.

The submissions will be reviewed by regional PennDOT offices, and up to five teams will be invited to **present their solutions** to a team of judges from the **PennDOT regional office** depending on where their school district is located. **Note:** If your team is selected as a regional finalist, a PowerPoint presentation (or similar presentation software), consisting of no more than 15 slides must be created. Presentations must be no longer than 15 minutes. In addition, models, diagrams, videos, and other visual aids or supporting materials can be used as part of your presentation to demonstrate your team's innovative solution to the PennDOT regional office judges.

Winners will be selected from the PennDOT regional offices; regional winners will advance to the statewide competition, where one statewide winner will be selected.

The challenge is open to **Pennsylvania high school freshmen, sophomores, juniors, and seniors** in public, private or charter schools, and homeschooled students. **Note:** PennDOT employees and their family members (siblings, children, grandchildren, nieces and nephews) are ineligible to enter.

## Deadline

Submissions must be received by PennDOT's Bureau of Strategic Business Operations by **11:59 PM on January 29, 2027**.

## Process and Timeline

1. By **January 29, 2027, at 11:59 PM**, complete and submit the PennDOT Innovations Challenge Submission Form to PennDOT's Bureau of Strategic Business Operations.

2. By **February 12, 2027**, PennDOT regional offices will review initial submissions, select up to five finalists and invite them to present their innovative solutions to a panel of judges, either in person or virtually.

3. By **March 19, 2027**, PennDOT regional offices will select winners for the **statewide judging** in **April 2027** to present, either in person or virtually, their innovative solutions to the PennDOT Secretary and a panel of judges, who will determine the statewide winner.

## Judging Criteria

- **Effectiveness – 10 points**
  - Does the solution holistically address the challenge?
  - Could the solution be used by PennDOT without substantial revisions?
  - Does the solution address a problem that can be solved with tools, techniques and/or technologies that are available today?
  - Can the solution be easily implemented by PennDOT?
  - Does the solution include a plan for statewide deployment and for continued operation and maintenance after implementation (if applicable)?
- **Benefits to the Community – 10 points**
  - How effectively does the proposed solution reduce risk of incidents, protect travelers, and enhance overall roadway safety?
  - To what extent does the solution minimize structural damage, repair costs, detours, and long-term disruptions to residents, businesses, and emergency services?
  - How well can the solution be implemented in urban, suburban, and rural areas of Pennsylvania, ensuring fair access and benefits for all without creating new barriers?
- **Cost-Effectiveness – 10 points**
  - Does the solution identify and effectively address any costs to implement the solution?
  - Is the solution sustainable and cost-effective to maintain in the long term?
  - How effectively does the solution lower expenses related to bridge strikes, including repairs, emergency response, and traffic disruptions?
  - To what extent does the proposal leverage current PennDOT assets, systems, or data streams to minimize new spending?
- **Innovation – 10 points**
  - Does the solution inspire transportation progress?
  - Does the solution introduce an original idea or advanced concept?
  - Does the solution show promise as a catalyst for continued improvement?
  - Does the concept rethink traditional practices and offer inventive methods to prevent overheight vehicle strikes?
- **Presentation – 10 points**
  - Were the presentation materials submitted completely?
  - Is the solution presented in a captivating manner?
  - Is the solution presented with clarity and forethought?
  - Did the presenters discuss all aspects of the solution from formulation through execution?

- Did the group members answer questions from the judges completely, logically and personably?
- Did the brief write-up on the solution contain a clear, complete and well-organized summary of the project?

**Resources**

- PennDOT Bridge Hits Campaign
- PennDOT Launches Campaign to Prevent Bridge Hits: 'Check Your Height, Know It's Right'
- NCHRP Research Report 1132: Bridge and Tunnel Strikes: A Guide for Prevention and Mitigation

**Contact Information**

For questions or more information, email PennDOT's Bureau of Strategic Business Operations at DOTInnovations@pa.gov.