Grade 12 NTI Day #7 ELA
Teacher: Mrs. Lee

Text:
States that Face Winter Storms Wield Technology to Melt Icy Road Hazards
By Tribune Content Agency

Assignment Instruction:

- Task 1 – Read and Annotate the Article
    - Underline key ideas and details
    - Make notes in the margin every couple of paragraphs – write a summary or ask a question
- Task 2 – Complete the Writing Prompt – Short paragraph
- Task 3 – Complete the text dependent questions (1-4).

Important:
This assignment will also be available in Google Classroom. Please feel free to contact Mrs. Lee with any questions via email: andrea.lee@pineville.kyschools.us

States that face winter storms wield technology to melt icy road hazards

By Tribune Content Agency, adapted by Newsela staff on 01.05.16
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Level **1130L**

During a snowstorm, two snowplows clear snow from a road in Frizzellburg, Maryland, March 5, 2015. AP/Carolyn Kaster

WASHINGTON, D.C. — State transportation officials across the U.S. are preparing for blizzards and ice storms. Thanks to technology, many of them have new ways to help clear roads and make them safer.

From Pennsylvania to Nevada, states will battle the elements by using high-tech tools. Road sensors, tracking gear on snowplows and onboard cameras that upload photos of current conditions are some examples.

"Technology has changed winter services across the board," said Rich Roman, maintenance and operations director for the Pennsylvania Department of Transportation. "Look inside a plow truck — it almost looks like the cockpit of an airplane."

Rick Nelson coordinates the American Association of State Highway and Transportation Officials (AASHTO) winter maintenance program. He said states are increasingly devoting time and money to research and technology to ensure people can get where they need to go, despite the weather.

Snowstorms Take A Bite

"So many people think there isn't anything you can do about the winter — it snows and you just accept it," Nelson said. "But as a country, we are so dependent on our mobility. There's a lot of pressure on states to maintain mobility 24/7, 365 days a year, regardless of what the weather throws their way."

State transportation departments are usually responsible for maintaining highways, state roads and bridges. In many states, that means paying millions of dollars for trucks, salt and staff time.

An AASHTO survey of 23 states found they spent about $1.13 billion between October 2014 and April 2015 treating and plowing roads. For many that represented a large portion of their annual maintenance budget. Maryland, for example, spent nearly a third of its budget. New Hampshire spent 55 percent.

Pavement Outfitted With Sensors

One of the worst-hit states last winter was Massachusetts, which was struck by 31 storms, two of which brought among the heaviest snowfalls on record. The state ended up shelling out more than $153 million to treat and plow roads.

States that experience cold weather routinely face special challenges. Transportation officials say they must clear snow and remove ice from the roads quickly and efficiently.

Nelson said the National Weather Service and meteorologists do a good job forecasting the weather, however a winter storm can be very different once it hits the ground. That's why states are turning to snow-fighting technology.

Many agencies, for example, have installed their own weather stations that use sensors in the pavement to notify them about the road's temperature, whether it's wet or dry, even if it has been treated with de-icer. That helps them determine when to apply more, or fewer, chemicals.

Pennsylvania Adds Tracking Gear

Nelson said states are more proactive than they used to be. In the past, they would say, "It started snowing, I plowed and put my salt on the road," he said.

Some states use tracking gear on plow trucks to feed headquarters instant data on each vehicle's location. A few also use the gear to track weather, road conditions and the amount of salt being used. This alerts transportation supervisors to changing conditions and helps them get a better handle on the use of materials, trucks and overtime.

Roman, of Pennsylvania's transportation department, said the 728 or so trucks that cover the state's interstates and expressways will be outfitted with sophisticated tracking gear this winter. The change is part of a $1 million pilot project. "We're hopeful this will make our truck routes more efficient and help us manage our materials a lot better," Roman said. One way would be using less salt than usual if the temperature rose, he said.

The state spent nearly $74 million on salt last year, Roman said. He estimated that the pilot project would result in at least $700,000 in savings this winter.

Saving Money And Saving Lives

Saving on salt means states can spend more on routine maintenance the rest of the year. That includes filling potholes, paving and mowing.

Some state transportation officials also are using technology to analyze their performance during particular storms. They look at such things as how quickly crews clear roads to bare pavement so that motorists are able to drive at normal speeds. They're also trying to determine whether crashes are reduced.

About 1,500 people a year, on average, are killed in crashes involving snow, sleet or ice, said Paul Pisano. He is acting director of the Federal Highway Administration's research and development office.

"I absolutely believe that these technologies are helping states better manage the roads and provide a safer driving environment and a more effective and efficient system," Pisano said.

Iowa Calls On iPhones

Iowa has been out front in using snow-fighting technology and in sharing information with the public.

Craig Bargfrede, who runs Iowa Department of Transportation's winter operations, said about half the state's 900 snowplows are equipped with iPhones, which are mounted inside the trucks and take photos of the road every five to 10 minutes. The photos are posted on an in-house website so supervisors can see the actual conditions. This lets supervisors see road conditions from home and the office instead of having to get to roads. It saves money and time, Bargfrede said.

In Minnesota, about two-thirds of the state's 850 plow trucks are equipped to gather data. They collect data on atmospheric conditions, air and road temperatures and up-to-the-minute weather information. The technology takes the data and comes up with recommendations on which chemicals to spread, how much to apply, and how frequently to plow.

State officials aren't just worried about tackling bad weather. They're also concerned about the impact of using salt and anti-icing chemicals, which can be hazardous in some environmentally sensitive areas. In years' past, a plow truck operator would simply turn on the spreader and distribute salt over and over. The new strategy is to use just the amount needed to do the job and no more. Officials say technology helps to make that happen.

Write Prompt

Write a short paragraph that explains the central idea of the article. Use at least two details from the article to support your response.

Quiz

1 Which of the following answer choices BEST describes Bargfrede's approach to the use of technology for clearing roads in winter?

(A) progressive

(B) conservative

(C) oppositional

(D) conventional

2 Read the sentence from the section "Pavement Outfitted With Sensors."

Transportation officials say they must clear snow and remove ice from the roads quickly and efficiently.

Which of the following words is closest in meaning to the word "efficiently" as used in the sentence?

(A) adeptly

(B) profitably

(C) practically

(D) adequately

3 The author develops the idea that traditional approaches to clearing winter roads are less effective than they could be in all of the following ways EXCEPT:

(A) by explaining the steps taken to clear roads during dangerous winter weather conditions

(B) by describing the different types of technology various states use during winter weather conditions

(C) by providing examples of how technology is improving responses to winter road conditions

(D) by presenting statistical data supporting the use of technology in responding to winter road conditions

4 Read the sentence from the section "Iowa Calls On iPhones."

Iowa has been out front in using snow-fighting technology and in sharing information with the public.

What is most likely meant by "out front" in the sentence?

(A) ambitious

(B) pioneering

(C) approachable

(D) forthcoming