

Snow Removal Process Has Evolved

When it comes to combating the wiles of winter storms, the Pennsylvania Department of Transportation (PennDOT) uses a pre-planned approach. It hasn't always been that way as the snow removal process has evolved over the past 200 years.

As towns and travel routes in the northeastern United States became established in the early 1700s, winter storms often rendered roads impassible to anything but foot traffic. To improve travel, people started to equip their horse carts and coaches with ski-like runners, which worked better than wheels in the snow.

Cities continued to grow and winter blizzards became a greater problem. Intercity roadways would be blocked off with snow for weeks at a time, preventing the delivery of food and supplies.

Early attempts at snow control involved citizens leveling or packing down snow drifts for sleighs. Residents and merchants were charged with clearing their own streets and sidewalks by hand. No citywide efforts existed.

It wasn't until the 1840s that the first patents for snow plows were issued.

Milwaukee was one of the first cities to use a snowplow, which was a wooden wedge-plow attached to a cart pulled by a team of horses.

The invention of the snowplow created interest in municipalities taking the responsibility for



Shovelers in New York City remove snow after a blizzard in 1926.
(Credit: National Oceanic and Atmospheric Administration)

snow removal. But another problem was born — plowing the main streets often left the side roads blocked off with large mounds of snow.

Many cities responded by hiring thousands of laborers to shovel the snow, haul it away, and dump it in local waterways.

Following a major blizzard in 1888, the cities revamped their snow removal policies. Municipalities began to establish policies to be proactive instead of reactive, including the development of Assigned plow routes.

The first motorized dump truck and plows came onto the scene as early as 1913.

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Covered in this issue:

Embedded Tech and Engineering Topics — Infrared sensors, Automated Vehicle Location

Vocabulary Terms — Evolve, patent, blizzard, proactive, reactive

Want to have "Road Trip" sent directly to your email every other month? Submit your email address to jharry@pa.gov and you'll be added to the list.

The newsletter is also available online at www.penndot.gov/RegionalOffices/district-1.

Computers Help Deliver Efficient Service

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The snow loader, a contraption that worked like a conveyor belt to dump snow into a truck, came into use in 1920. This enabled cities to more easily move snow off the streets.

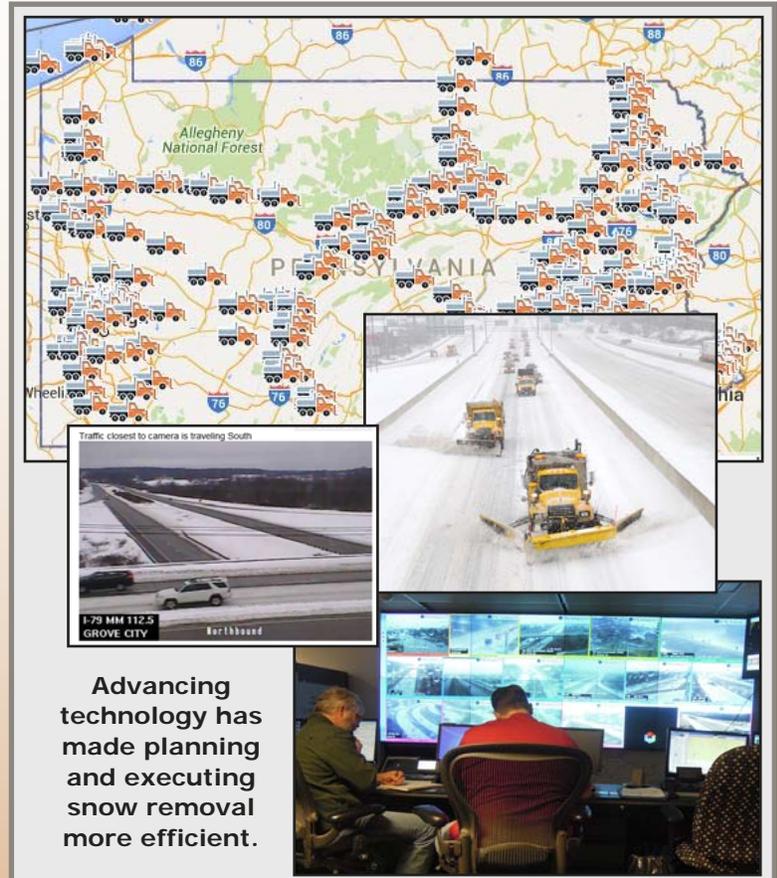
With the expanding popularity of motor vehicles came a shift in the methodology of snow control. Whereas snow had been packed down on the streets for sleighs, residents now desired that snow be completely cleared away for cars. Large snowfalls once deemed enjoyable, now became unbearable and hazardous.

This ushered in the wider and more frequent use of salt on the roadways to removed ice.

Today, PennDOT continues to use plow trucks and salt as the main weapons to combat winter weather conditions. The department uses other tools as well, including salt brine on roadways in preparation for a storm and anti-skid materials on secondary roadways.

Computers are helping PennDOT operators deliver higher service efficiency to motorists. Infrared temperature sensors on department trucks give operators the exact temperature of the pavement. Computerized salt spreaders help regulate the rate salt is dispensed onto the roadway, regardless of the trucks' speed.

DID YOU KNOW... The National Weather Service defines a blizzard as large amounts of falling or blowing snow with winds in excess of 35 miles per hour and visibility of less than a quarter of a mile for more than three hours.



Advancing technology has made planning and executing snow removal more efficient.

A network of traffic cameras located near major roadways throughout the state allow the highways to be monitored from regional traffic centers.

The department's newest snow removal related effort is the installation of Automated Vehicle Location (AVL) devices in all plow trucks. The AVL system helps residents know what roads are being plowed in real time. The AVL unit sends a cellular signal through the system communicating the truck's location within its plow route - which average 40 miles long - and how much material is being spread onto the roadway.

The traffic cameras and AVL information can be viewed online at www.511PA.com.

(Historical information provided by the National Snow and Ice Data Center.)

PennDOT
Engineering District 1
255 Elm Street
PO Box 398
Oil City, PA 16301

PennDOT
District Press Officer
Jim Carroll
814.678.5035
Email: jamecarrol@pa.gov

PennDOT
Safety Press Officer
Jill Harry
814.678.5035
Email: jharry@pa.gov

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