

# Nova Scotia's proactive approach to winter road maintenance

During the last number of years the Department of Transportation and Infrastructure Renewal (TIR) has been modifying its approach to winter road maintenance. This year motorists will witness an increased use of anti-icing procedures on Nova Scotia roadways as a proactive strategy to safer winter driving.

## What is Anti-icing?

Anti-icing or direct liquid application (DLA) involves spraying the road surface with salt brine (a liquid solution of water and rock salt) prior to a winter weather event. Anti-icing can begin up to 16 hours before a predicted frost or snow fall. The salt brine dries on the road surface and begins working immediately at the start of a winter weather event. Salt brine lowers the freezing point of water and reduces the chance that snow and ice will form a bond with the pavement surface.

Traditionally in Nova Scotia dry rock salt is used during cold weather. The salt is applied at the start of a snowfall or frost. The rock salt melts through the snow and ice that builds up on the road and works to break the ice bond which has already formed on the pavement surface. This approach is referred to as de-icing and is considered a reactive procedure.

## Where is Anti-icing Done?

Anti-icing is used primarily on Nova Scotia's 100-Series Highways and on busier trunk highways.



*Specially modified tanker trucks and trailers are used to spray salt brine onto the road surface. Motorists should stay at least 100 feet behind any vehicle applying salt brine and use caution when passing.*

## What are the Benefits of Anti-icing?

<b>Starts fast</b>	Salt brine on the road begins to work immediately at the start of a winter storm and helps prevent a bond forming between frozen precipitation and the road surface.
<b>Quicker Results</b>	Anti-icing returns road surfaces to normal faster, resulting in fewer accidents and delays. Once this bond is formed it requires more time and resources to return the road to normal conditions.
<b>Covers More Ground</b>	Crews can cover more territory by beginning treatment in advance of a storm.
<b>More Efficient</b>	Salt is used more efficiently because brine spray doesn't bounce or blow off the road surface like dry salt. This saves money and reduces the effect on the environment.
<b>Less Waste</b>	If a storm is delayed, salt residue remains on the road, ready to begin work as soon as precipitation starts.



*Road where anti-icing was used.*



*Road where anti-icing was **not** used.*

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## When is Anti-icing Done?

Many factors are used in determining when to apply salt brine. Road temperature must be  $-7^{\circ}\text{C}$  or warmer, wind speeds must be low, and accurate forecasting is needed. Most spraying will take place when the roads are dry and the weather is clear.

Most highway cameras that drivers see on provincial roads are part of a complete weather station that record air temperature, pavement temperature, wind speed, and humidity. TIR's experienced maintenance personnel utilize this information along with an advanced weather forecasting system to determine when to anti-ice.

## What should motorists expect?

Vehicles applying salt brine travel at speeds under 90 km/hr. Trucks may be spraying several lanes at once. The impact on vehicles will be less than driving through slush that has been treated with salt, however, drivers should use caution if they drive through the spray.

## Other Tools

When a winter storm is in progress continuing application of dry or pre-wetted rock salt may be required to prevent a snow or ice bond from forming on the pavement surface. Pre-wetting rock salt is a technique which involves spraying salt brine on to dry rock salt as it is applied to the road surface.

The benefits of pre-wetting include:

- Less scatter of material on the roadway and less wasted salt
- Melting process is accelerated
- Melts snow and ice at lower temperatures
- Melts snow and ice with less rock salt

Highway webcams (below) are not only a useful tool for drivers they're also a part of an intricate monitoring system that help TIR staff predict when to employ its ice-fighting methods.



Anti-icing is a technical and proactive approach to winter road maintenance. By having the right amount of salt brine in the right place at the right time TIR is able to wage an effective battle against ice build up on Nova Scotia highways.