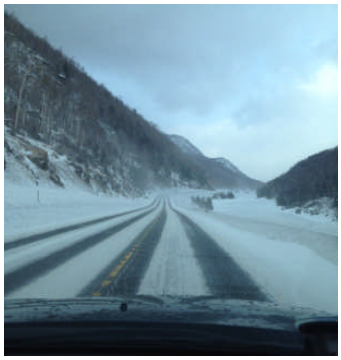
2015 GreenLITES Operations Innovation Awards

Residency Name: Office of Transportation Maintenance (Main Office), Essex, Hamilton and Franklin Residencies (Regions 1, 2 and 7). The Office of Transportation Maintenance directs the agency's maintenance program. The three Residencies are in northern New York and experience heavy snow fall.

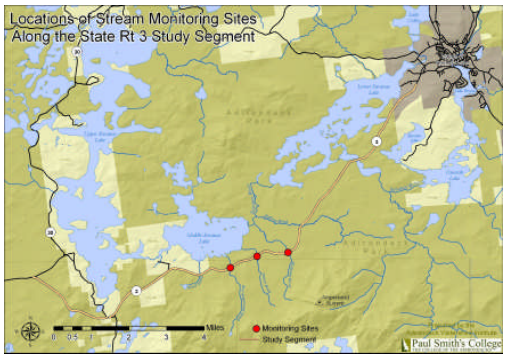


Project Description: The Office of Transportation Maintenance initiated the **Adirondack Snow and Ice Pilot Test** to reduce salt application practices in the Adirondacks and across the state. Due to concerns about the effects that road salt may have on water quality, NYSDOT partnered with Paul Smiths College, the Adirondack Council and ADKAction.org.

Partnering with stakeholders, NYSDOT developed a program to reduce salt application to reduce environmental impacts, without creating winter travel risks. The pilot included: Route 3 (Franklin County), Route 8 (Hamilton County) and Routes 73 and 86 (Essex County). The following strategies were used to reduce effects of deicing chemicals on nearby waters:

- Use of magnesium chloride-treated salt in place of conventional road salt.
- Modified snow and ice guidelines to reduce initial application rates by 10 percent.
- Reducing truck speeds while applying material to minimize materials bouncing off pavement and onto shoulders.
- Rigorous monitoring of snow and ice equipment to ensure materials applied at the correct rates and quantities.
- Use of the Maintenance Decision Support System (MDSS) as an operational management tool.
- Use of under-body plows to increase the removal of snow and ice on each trip and planned expansion of salt brine production and use in pre-storm anti-icing operations.
- Stream monitoring by Paul Smiths College.

Under-body Plow in use



Stream Monitoring Stations

The past two winters were considered severe, compared to an average winter. As part of the pilot, NYSDOT developed a formula to index actual deicing chemical applications to severe weather. Based on this index, the applications proved to be significantly reduced, compared to standard operational guidelines, without experiencing reduced levels of service.

Sustainability and Environmental Highlights:

- On an indexed basis, reduced salt rates from 194 pounds per lane-mile, compared to standard operation guidelines of 225 pounds per lane-mile.
- Protected safety of winter travelers.
- Started on-going partnership between NYSDOT and stakeholders. The Adirondack Council in cooperation and local stakeholders formed a Road Salt Working Group, in which NYSDOT participates as subject matter experts offering technical advice and assistance.

Residency Name: **Allegany Residency, Region 6**

Residency Description:
Allegany Residency is the western-most Residency in Region 6. The Residency maintains highways ranging from Interstate 86, the Southern Tier's major east-west expressway, to many rural state highways that connect communities within the upper Genesee River Valley.

Project Description: **Snow Plow Rear Vision Camera**

Residency crews in Allegany County installed a rear view camera system on the back of a snow plow truck. The camera was initially installed to reduce the potential for backing accidents. However as the camera went into use, managers and drivers discovered that with proper placement, they could see the salt flowing out of the truck as well as the spread pattern. With this view available in the truck cab, a driver can determine if the pattern is appropriate to conditions or if there are any issues with the spreader equipment being jammed with salt chunks.

Sustainability, Safety and Environmental Highlights:

- As photograph two, below, shows, the camera can help optimize salt application by giving a driver visual confirmation that the spreader settings are correct and no salt is being wasted.
- Enhances visibility for a driver especially when backing, which reduces accident probability.

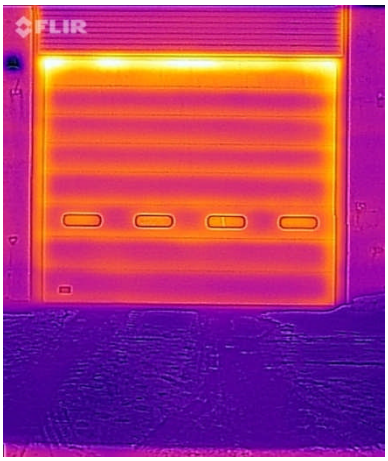
Residency Name: **Franklin Residency, Region 7**

Maintenance Group Description: Franklin County is a rural residency in Northern New York. Approximately 70 percent of the county is located in the Adirondack Park; the remaining 30 percent is gentle hills sloping to the St. Lawrence River Valley and Canada. This varied geography challenges the Residency to undertake several sustainable activities that minimize natural resource consumption and help limit the effect the highway system has on the environment. With typical lows of negative 20°F during the winter, energy conservation is important.

Project Description: **Energy Conservation Phone App**
During the summer of 2014 the Franklin County Residency had a project to replace the roof at the Residency Headquarters in Malone and the residency now has a water tight roof with excellent insulation values.

Inspired by the new energy savings from the project and in response to a request from Dan Phalen, a Region 7 Health and Safety Representative, to examine ways to lessen heat loss from the large garage doors present at the residency and sub-residencies throughout the county, Residency staff purchased an inexpensive ($300) thermal imaging adapter for the IPhone 5. This tool allows the Resident Engineer (RE) to view heat loss locations in buildings throughout the county. As a result of the RE's evaluations, solutions to minimize the heat loss from the various buildings are identified. Capturing the thermal images on an average sized residency building can be accomplished in less than 1 hour. Once taken the images are easily transmitted via email. Possible retrofits include sealants, and insulation around high loss doors and windows etc. These retrofits coupled with previously installed measures such as set back thermostats, lower wattage lights, automatic dusk to dawn lights and annual furnace servicing all decrease the energy used throughout the county. As the RE becomes more adept at identifying high heat loss areas and practical solutions, he will share his knowledge with the surrounding residencies during Resident Engineer meetings and follow up with a site visit to the other residencies and thermal image their buildings, as requested.

Side Man Door Heat Loss Including Exhaust Fan



Garage Bay Door Heat Loss at Door Top

Sustainability and Environmental Highlights:
- The app is a relatively easy to use tool to help reduce energy consumption.
- Work arising from using the app will result in:
  - More comfortable work area – less drafts.
  - Work areas with fewer unwanted insects.
- Innovation can be easily shared with others in the Region or adjoining regions.