Improving Visibility for Snow Plow Operators

Visibility problems encountered by snow plow operators are the subject of two LRC research projects. Atmospheric conditions such as rain, snow, and fog can create poor visibility and unacceptable levels of glare due to light backscattered into the operators’ eyes. The LRC will examine these visibility problems and make recommendations for lighting practices that will improve visibility and safety for snow plow operators.

During the past two winters the LRC tested a proposed lighting configuration for snow plows operated by the New York State Department of Transportation (NYSDOT). In this configuration the lights are moved up and to the right of the driver’s line of sight, which greatly reduces the amount of light backscattered from the headlights. Drivers prefer the new lighting system over the systems currently used on the fleet.

The LRC is teamed with the NYSDOT for both of these programs and will conduct most of the testing with NYSDOT personnel and snow plowing fleet. The Department of Mechanical Engineering, Aeronautical Engineering, and Mechanics at Rensselaer provides support in developing aerodynamic solutions to visibility problems.

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The LRC is also testing a wider range of factors which reduce visibility, such as windshield icing and generation of a snow cloud, for the National Cooperative Highway Research Program (NCHRP). The NCHRP program examines:

- The ability of the operator to see from the cab of the snow plow
- The ability of other drivers to see and avoid the moving snow plow

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Below are drawings of snowplows, with different weather conditions listed above each one. Circle the lights that you use under each different condition while driving at night. If you do not have a certain kind of light on your plow (e.g., a left-wing light) put an “x” through it. If you have any lights mounted on your truck that are not shown, please draw them in and label what kind (e.g., spotlight, floodlight) they are.

Survey of snow plow operators: With the cooperation of NYSDOT, the LRC elicited data from operators on perceived problems, behaviors, and proposed solutions. The LRC suggested modifications and alternatives to those solutions, drawing on vision science and physics.