



COUNTY TRANSPORTATION

SITUATION

Five years ago a county in Minnesota set out to get control of one of their largest variable costs, winter maintenance. The department plans, designs, builds and maintains a system that includes 440 miles of road, 81 bridges, 250 traffic signals and 25,000 signs. Each year residents and commuters travel about one billion miles on their county roads and highways. All of this adds up to a significant cost especially with the unpredictability of one winter to the next. During an era of significant budget pressure it became extremely important to understand and control winter maintenance costs.

CHALLENGE

Among the largest variable costs associated with winter maintenance is the cost of salt. Over the past 20 years salt usage has risen steadily to the point where in an average winter 350,000 tons of salt are dropped on the roads in the Twin Cities metropolitan area. Beyond the budget concerns of increased salt usage, there is also a growing debate over the long term impact salt usage is having on the watershed.

Water quality experts have become increasingly alarmed that the level of salt usage is turning the Twin Cities' lakes into a toxic soup. A recent University of Minnesota study found that 78% of the salt used on public roads stays in the water instead of flowing downstream ultimately into the



ocean. This has a dramatic affect on plant and wildlife within the lakes and rivers in the area.

SOLUTION

Winter maintenance professionals have been given a daunting task: find a seemingly impossible balance between public safety, fiscal responsibility and environmental conservation. FORCE America® provides complete systems to help organizations focused on winter maintenance to measure, control and ultimately reduce salt and other road treat chemical usage. FORCE America's focus is to provide tools to assure the right blend of materials are used in the minimum quantities to maximize public safety while minimizing cost and environmental impact.

For one county in Minnesota, step one was to benchmark the amount of salt being used during a typical winter storm event. The county estimated that in 2006, 450 tons were being used with an average winter consisting of 33 storm events. Next, in 2007 the county deployed SSC5100 spreader controllers by FORCE America. This deployment provided the County with a closed-loop system that provided much tighter control over how material was spread. This system constantly monitors and adjusts the spread rate of the material to coordinate it with variables such as the speed of the truck with the spinner and auger efficiency. The system also maintains totals of material used so the performance of each truck and each operator can be monitored.

Now that the county could monitor and control how much salt was being used, the third step was to determine where the salt was being used. FORCE America provides a fleet management solutions via its PreCise® MRM division that integrates comprehensive GPS tracking with the spreader controls. In very simple terms, the system provides organizations like this particular county with a simple yet accurate means of mapping any stretch of road in the county and determining how much salt was used over a given period of time.

Using detailed mapping and customizable reports, organizations can constantly monitor where salt is being distributed and how efficient each operator is at applying salt to the roads. Preventing waste helps assure only the minimum amount of material is used to keep the roads clear. The system also allows organizations to gather other important variables such as what roads have been plowed and the air and road temperature on each section of road. This information allows the county to avoid duplicating efforts and adjust the timing and mixture of the material used based on the conditions to optimize the results. This particular county installed the systems in 2009 and was able to instantly monitor their winter maintenance fleet via PreCise MRM's web-based tool.

RESULTS

The Minnesota county has had the system in place for more than two complete winter seasons including the severe winter of 2010/2011. In 2010 the county averaged 350 tons of salt per storm event, and only 310 tons per event in 2011. This is a reduction of 22% to 31% or 100 to 140 tons of salt per storm event to achieve the same results. Salt costs are typically \$62.50 per ton resulting in savings of \$6,250 to \$8,750 per storm event. With a typical winter consisting of 33 storm events, the county reduced its winter maintenance costs by \$206,000 to \$288,000 annually. And, lakes and rivers of the county have been spared 3,300 tons of salt. As a visual aid, this represents approximately 127 truckloads of salt not being dumped in Minnesota watershed.

There were other tangible benefits to deploying the system that included improved customer service by being able to provide better visibility to residents as to when a plow truck is to be in their area and reduced rock chip and speeding problems with the operators.

The county continues to be progressive in reducing their winter maintenance costs and improving their impact on the environment while maintaining safe roads and bridges. It is a never-ending battle but with the help of FORCE America, the county has the tools to successfully fight winter.