

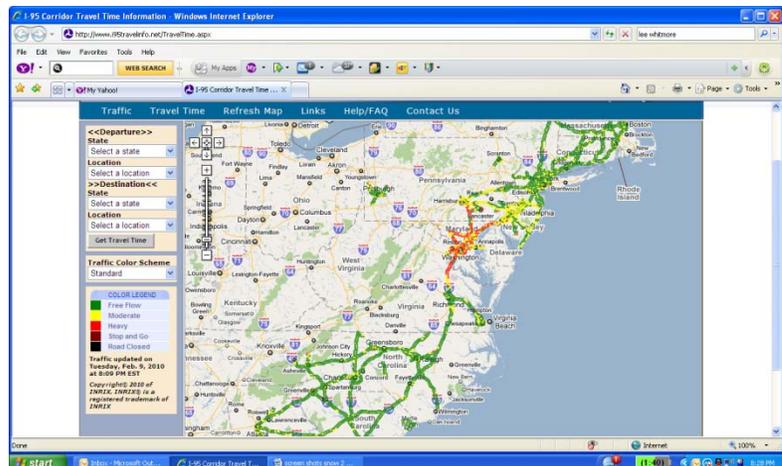
Agency Benefits (Regional) White Paper

Executive Summary

The benefits of the Vehicle Probe Project have become apparent to member agencies as they use the data, to identify and respond to traffic issues, enhance 511 capabilities, expand coverage area, and as a basis for developing performance measures. When member agencies are also neighbors, the benefits take on more regional attributes.

The vehicle probe data monitoring site provides real time travel speed information on roadways included in the project. South Carolina uses the site to monitor traffic flow northbound into North Carolina and southbound into Georgia. North Carolina also views traffic flow from Virginia, South Carolina and Tennessee. Personnel at both North and South Carolina Departments of Transportation closely monitor the Charlotte, NC - Rock Hill, SC metro area and the I-95 corridor, both major commuter routes which cross state lines. Jo Ann Oerter, ITS Operations Engineer for the North Carolina DOT says, “The NCDOT is better able to manage traffic conditions when our neighboring state’s traffic is also visible on the monitoring site”.

North Carolina would like to see Virginia expand its own vehicle probe data coverage to include I-77, a roadway which has been the scene of several tractor trailer accidents affecting North Carolina near their state line. On I-85, North Carolina TMC staff was able to see southbound traffic congestion building into Virginia due to a



construction project. North Carolina checked that sufficient capacity existed on the parallel route of I-95 and then coordinated with Virginia to redirect traffic from I-85 to I-95. The detour back from I-95 included U.S. Route 64 and I-40 to ultimately reconnect with I-85.

In January 2010, the North Carolina Division of Parks and Recreation conducted a prescribed burn to reduce the threat of wildfire in the Kings Pinnacle area of Crowders Mountain State Park near the South Carolina border. When winds carried the smoke westward, visibility was inhibited on I-85 causing northbound traffic from South Carolina to slow down dramatically along a ten mile stretch of the roadway in the vicinity of Crowders Mountain State Park. The South Carolina DOT responded by activating their VMS signs with the message “Low Visibility Mile Marker 5-15”. Coordination between North and South Carolina helped to improve the safety and decrease traffic congestion by getting information out to the motorists along I-85.

North and South Carolina

In 2009, North Carolina's initial (core) coverage totaled 204 interstate miles and included rural areas where traffic information had not been previously provided. Their experiences with the vehicle probe data were so successful that North Carolina decided to expand its coverage to include all of its limited access roadways, an additional 972 miles.

North Carolina ITS Operations Engineer, Jo Ann Oerter, reached out to South Carolina's ITS coordinator Dan Campbell, to share their experiences using vehicle probe data and encouraged South Carolina to participate in the Vehicle Probe Project. South Carolina joined the project at its own expense and began receiving vehicle probe data statewide in August 2009. Similar to North Carolina, South Carolina also had many rural routes. Less than half of South Carolina's 900 interstate miles had any kind of data coverage. Now, South Carolina has over 1,200 miles of vehicle probe data coverage, including all of its limited access roadways.

State Agency Benefits

Both North Carolina and South Carolina use the monitoring site and are able to proactively initiate calls to law enforcement when traffic flows are impeded. This has been found to significantly improve incident clearance time. Before the Vehicle Probe Project, the DOTs were notified of incidents by emergency personnel 15 minutes to an hour after the occurrence. North Carolina's division offices also use the monitoring site for their areas, and verify incidents using their field forces. In addition, the monitoring site has been found to be useful to determine if an incident has been cleared.

North Carolina is also using the monitoring site to track possible future roadway improvements. Congestion and speed data is referenced to determine the extent of congestion and ideal travel times. South Carolina has found the vehicle probe data to be very useful when monitoring the typically problematic I-26/I-95 interchange during holiday travel periods when heavy traffic volumes are present.



Before the Vehicle Probe Project, North Carolina and South Carolina DOTs were notified of incidents by emergency personnel. With use of the monitoring site, the DOTs proactively initiate calls to law enforcement, significantly improving incident clearance times.

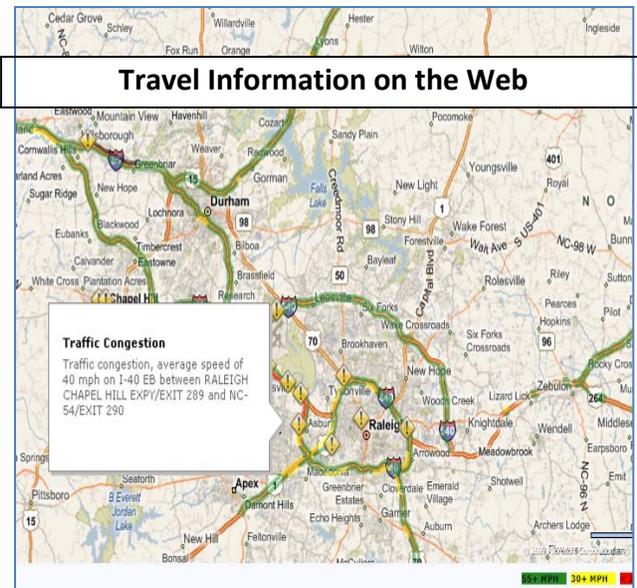
Use of vehicle probe data has also been useful when allocating limited resources. In a December 2009 snowstorm, the monitoring site reported slow vehicle speeds which helped personnel identify slick roadways allowing North Carolina field forces to better allocate their resources of salt and tow patrols.

For North Carolina, availability of vehicle probe data has significantly enhanced their incident management and 511 capabilities. The API feed is received by IT personnel and integrated into travel information for use on the North Carolina 511 website and call-in system. “Virtual message signs” provide 511 callers with travel time information along their selected route for the next three interchanges.

South Carolina launched its statewide 511 program in March 2010 incorporating the INRIX Vehicle Probe data. Without this data, their travel information program would have included less than 450 miles which were covered by RTMS sensors. Now, dynamic message signs in South Carolina are automatically updated through their integration of the direct data feed from the Vehicle Probe project. The travel times are periodically field tested and have been found to be accurate with no complaints from the public. In fact, a local reporter in the Columbia area found very good results when doing his own independent test.

Since SAFETEA-LU has updated its requirements regarding the timeliness of traffic and travel information on major highways to the traveling public, North Carolina and South Carolina have found the vehicle probe project to be a cost effective way to enhance 511 and DMS systems to create a basic real-time system for managing the operation of the surface transportation system. In addition, customers now expect to have travel information; North Carolina was constantly getting requests to provide more travel information.

Virtual Message Signs emulate a DMS sign in a voice “report”:
“Travel time on I-95 North from exit 27 to exit 42, 15 minutes”



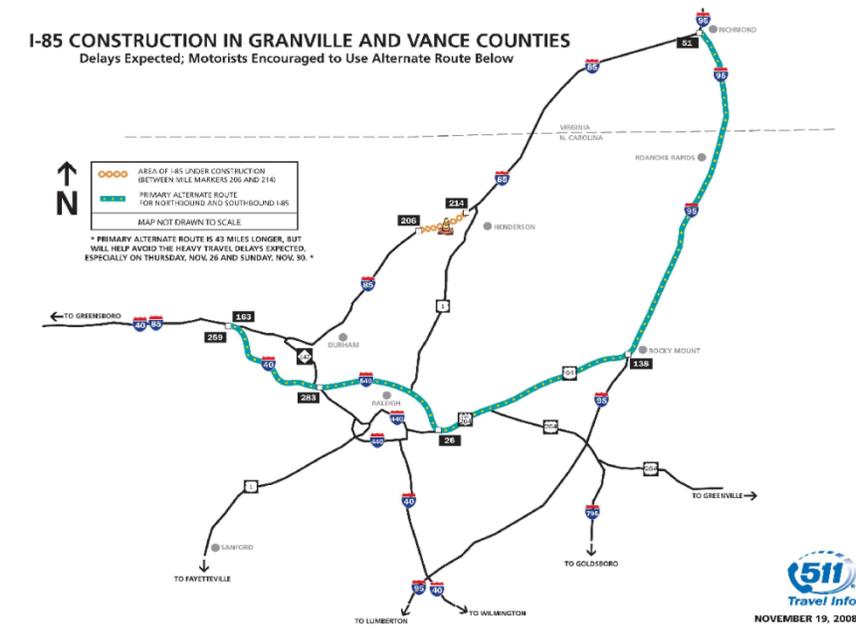
North Carolina has been able to more effectively apply its traffic monitoring budget by using vehicle probe project data to increase needed coverage. With typical RTMS equipment, installation and maintenance costs were approximately \$48,600 per mile. The vehicle probe data saves money by replacing RTMS at about a quarter of the cost. South Carolina is reducing its use of side fire radar detectors in favor of vehicle probe data. Maintaining its radar coverage over 300 miles is equal to the total cost of the vehicle probe data covering 1,200 miles with the added benefit of transmitting travel time data in addition to speed data.

The Regional Perspective

Personnel within both state monitoring centers are trained to use the vehicle probe monitoring site for locations without RTMS coverage. South Carolina uses the site to monitor traffic flow northbound into North Carolina and southbound into Georgia. Both North and South Carolinas closely monitor the

Charlotte, NC/Rock Hill, SC metro area and the I-95 corridor, as vehicles cross state lines during their daily commute.

North Carolina also surveys traffic flows from Virginia, South Carolina and Tennessee on the monitoring site. North Carolina would like to see Virginia expand its own vehicle probe data coverage to include Route 40, Route 81 and I-77, a roadway which has been the scene of several tractor trailer accidents



affecting North Carolina near their state line. North Carolina TMC staff was able to see traffic congestion building into Virginia on I-85 southbound due to a construction project. North Carolina checked that sufficient capacity existed on the parallel route of I-95 and then coordinated with Virginia to redirect traffic from I-85 to I-95. The detour back from I-95 included U.S. Route 64 and I-40 to ultimately reconnect with I-85.

South Carolina wished that Georgia traffic conditions were available over Thanksgiving weekend, when an incident lit I-95 northbound red on the monitoring site, approximately midway between the Georgia state line and I-95/I-26 interchange. Congestion grew through Savannah, Georgia. In hindsight, South Carolina acknowledges that coordinating with Georgia would have diverted motorists away from the scene. Only very recently, Georgia began receiving vehicle probe data.

When the North Carolina Division of Parks and Recreation conducted a prescribed burn in the Kings Pinnacle area of Crowders Mountain State Park near the South Carolina border in January 2010, westward moving smoke inhibited visibility on I-85 causing northbound traffic from South Carolina to slow down dramatically along a ten mile stretch of the roadway. The South Carolina DOT

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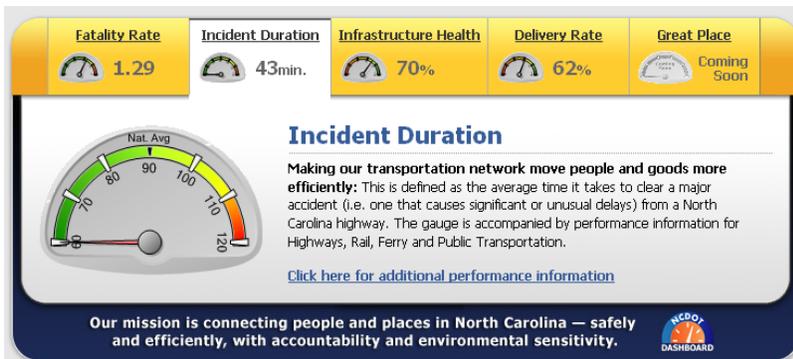
responded by activating their VMS signs with the message “Low Visibility Mile Marker 5-15.” Coordination between North and South Carolina helped to improve the safety and decrease traffic congestion by getting information out to the motorists along I-85.

Future Plans

North Carolina’s future plans include the addition of up to 500 more miles of coverage. In South Carolina, there may be future opportunities to increase coverage along hurricane evacuation routes so that they can be of greater assistance during emergency evacuations. South Carolina plans to incorporate the vehicle probe data for travel times statewide in its 511 system. Vehicle probe data is planned to replace all its radar detector systems.

“On I-40 in the Triangle, there is morning and afternoon congestion seen every day. Using the supplemental congestion and speed data will help to identify problem areas.”
-Jo Ann Oerter,
North Carolina ITS Operations

North Carolina is moving ahead to formulate performance measures using the vehicle probed data to monitor congestion and speed data and also plans to use vehicle probe data to populate incident



duration times as a performance measure for its planned “dashboard.” The University of Maryland is working with North Carolina to develop a performance measure prototype using a steady stream of travel time data over a period of time that can be used as a model for other states.

North Carolina plans to present roadway segment speed on its 511 website if the speed drops below a certain threshold. It also hopes to further modify the 511 system information to give origin/destination travel times. North Carolina would like to automate its DMS system to report travel time like South Carolina does today. In its effort to do more with less money, North Carolina is seeking ways to limit its use of RTMS in favor of vehicle probe data.