



TRANSPORTATION INFORMATION MANAGEMENT SYSTEM

ncbussafety.org

North Carolina Department of Public Instruction-Raleigh North Carolina

# TIMS Case Studies

## *Developing Snow Routes In Avery County*



**Avery County Schools**

*Growing a Bright Future One Child at a Time*



Avery County is nestled in the mountains of western North Carolina along the Tennessee border.

Avery County experiences an average of 20 cancellations, 15 two-hour delays and a handful of early dismissals each school year due to inclement weather.



Occasionally, your local NCDOT will review the street network throughout the county and update the list of roads that will be State Maintained moving forward.

State Maintained roads will typically receive some Road Services (road salt, brine, snow plow, etc.) from NCDOT before, during and after inclement weather.

For counties like Avery, where snow regularly creates hazardous road conditions for Bus Travel, some LEAs have developed Limited Snow Routes in TIMS based on the list of State Maintained Roads provided by NCDOT.

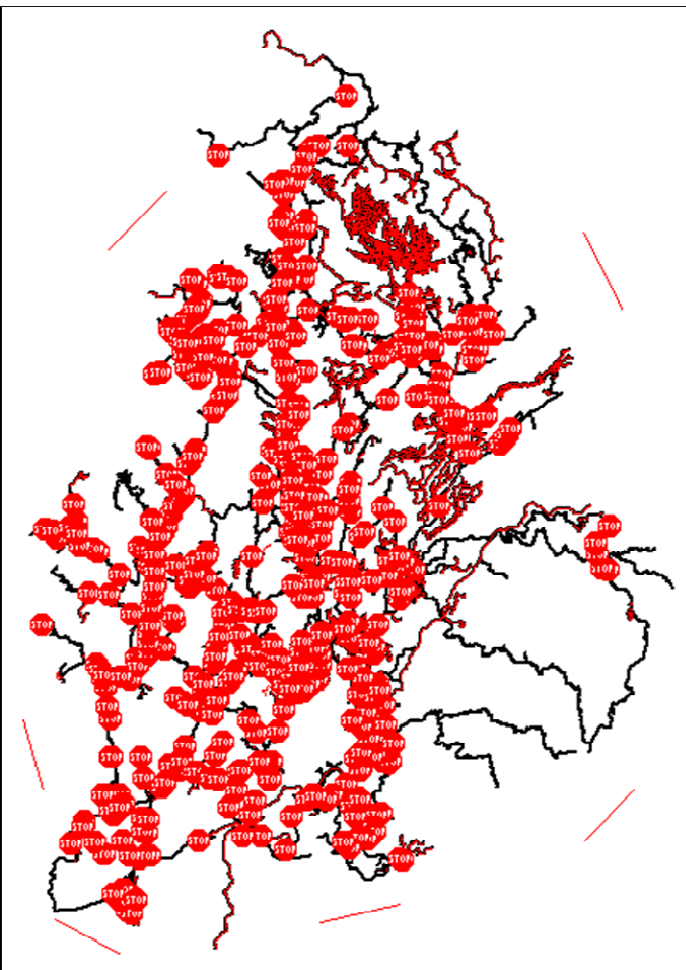
Following a reduction to the number of State Maintained Roads in 2015, the Avery County Schools Transportation Department was asked by the School Superintendent to reevaluate their “Plan B” Snow Routes.

The evaluation and redesign of “Snow Plan B” was performed by staff in the Avery County Schools Transportation Department.

TIMS Operator: Linda King  
Transportation Director: Brian King



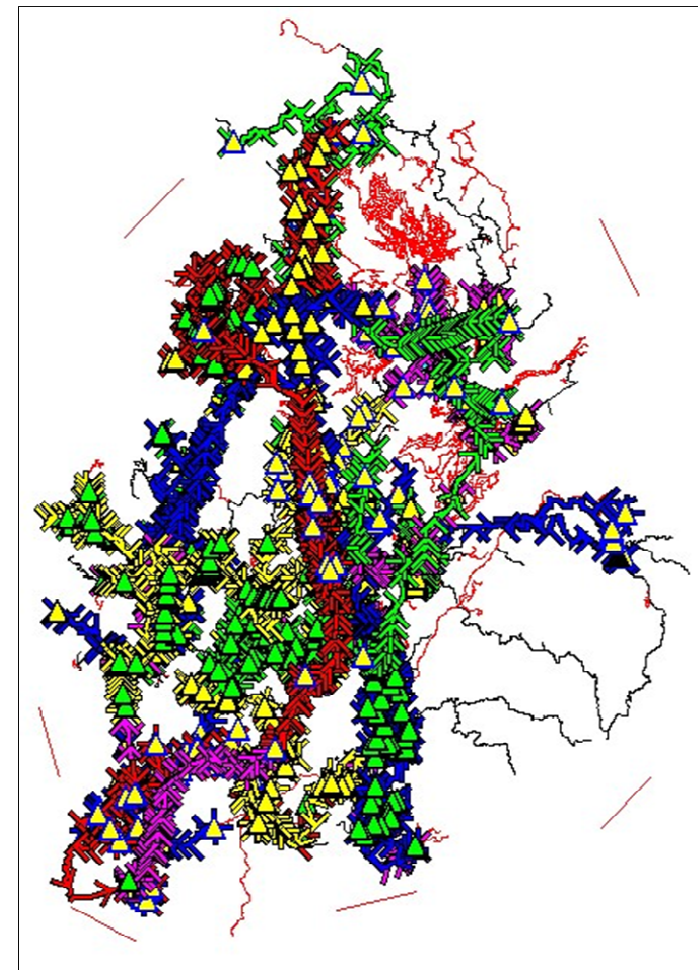




1,100  
Student Stops on Routes

**On a typical day in Avery County...  
They Transport...**

- **Up to 1,400 Riders**
- **Getting On or Off at 1,100 Stop Locations**
- **Going To or From 9 Schools**
- **Riding 29 Buses**
- **Totaling 2,800 Miles per day**



29 Bus Routes  
Servicing 9 Schools

After obtaining the updated list of State Maintained Roads from the Department of Transportation, TIMS Staff used the MARIS Street Attribute called Feature Class to code each of the State Maintained Roads they would be willing to travel during bad weather.

In this example, they used a Feature Class code of "P" to identify the main streets, roads and highways they would be travelling under this project.

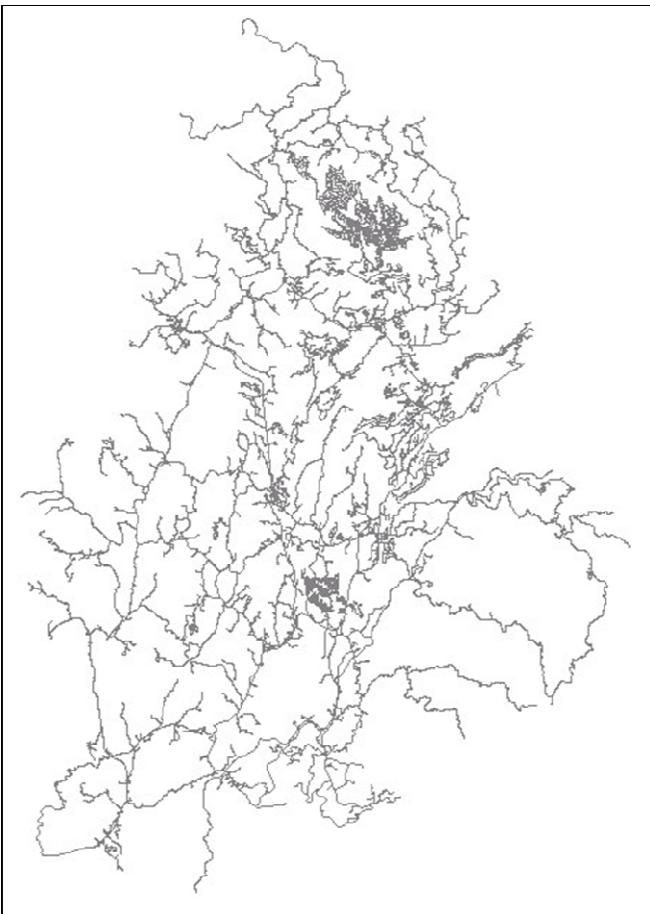
MARIS Edits were made using Group Attributes so that a Feature Class of "P" could quickly be applied to all segments for a particular street.

After coding each of the streets they would be traveling, a "Class P" Autostreet Layer was created to allow color coding of the main roads and highways.

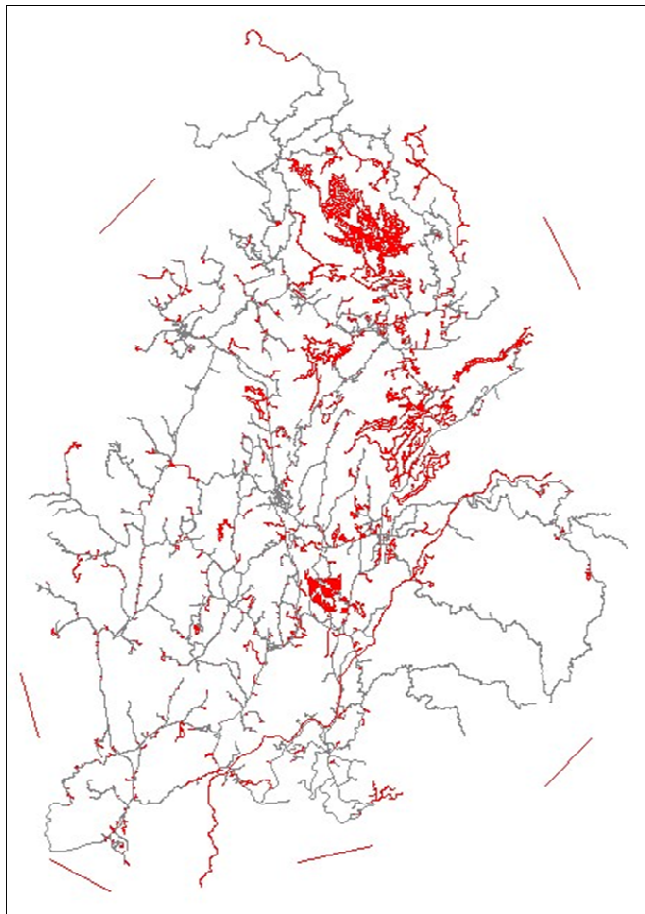
The screenshot displays a GIS application window. On the left, a 'Segment Group Attributes' dialog box is open, showing a list of attributes for road segments. The 'Class' attribute is checked and set to 'P'. The main window shows a map of a road network with several segments highlighted in blue, indicating they are part of the 'Class P' group. The map also shows other road segments in red and black. The dialog box includes a table with the following data:

Field to change:	Value:	From Nd	To Nd	Street Name	LSpd	RS
<input type="checkbox"/> Speed Left	0	49	1092	US 19E HWY N	35	35
<input type="checkbox"/> Speed Right	0	1092	1094	US 19E HWY N	35	35
<input type="checkbox"/> Direction	0	1094	1099	US 19E HWY N	35	35
<input type="checkbox"/> Left Nowalk 1	Set	1099	1100	US 19E HWY N	35	35
<input type="checkbox"/> Left Nowalk 2	Set	1100	1103	US 19E HWY N	35	35
<input type="checkbox"/> Left Nowalk 3	Set	1103	1105	US 19E HWY N	35	35
<input type="checkbox"/> Left Nowalk 4	Set	1105	1106	US 19E HWY N	35	35
<input type="checkbox"/> Right Nowalk 1	Set	1106	1107	US 19E HWY N	35	35
<input type="checkbox"/> Right Nowalk 2	Set	1107	79	US 19E HWY N	35	35
<input type="checkbox"/> Right Nowalk 3	Set	79	345	US 19E HWY N	35	35
<input type="checkbox"/> Right Nowalk 4	Set	345	1109	US 19E HWY N	35	35
<input type="checkbox"/> Hazard 1	Yes	1109	346	US 19E HWY N	35	35
<input type="checkbox"/> Hazard 2	Yes	346	1111	US 19E HWY N	35	35
<input type="checkbox"/> Hazard 3	Yes	1111	348	US 19E HWY N	35	35
<input type="checkbox"/> Hazard 4	Yes	348	1115	US 19E HWY N	35	35
<input checked="" type="checkbox"/> Class	P	1114	1117	US 19E HWY N	35	35
		1117	806	US 19E HWY N	35	35
		806	42	US 19E HWY N	35	35
		42	813	US 19E HWY N	35	35
		812	1121	US 19E HWY N	35	35

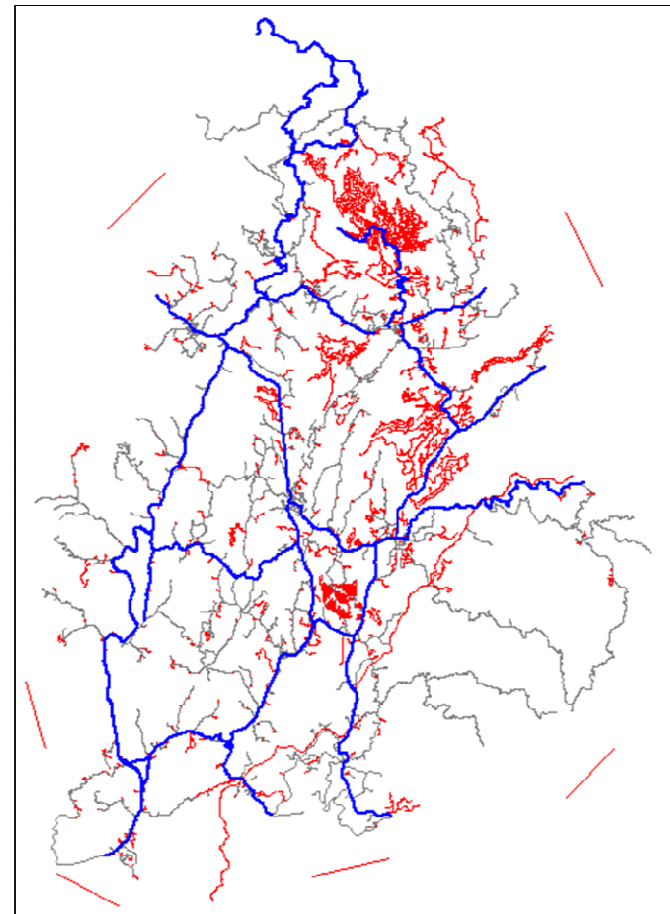
Base TIMS Map for  
Avery County



TIMS Map for  
Avery County  
*No Travel Roads in Red*



TIMS Map for  
Avery County  
*Plan B Snow Roads in Blue*

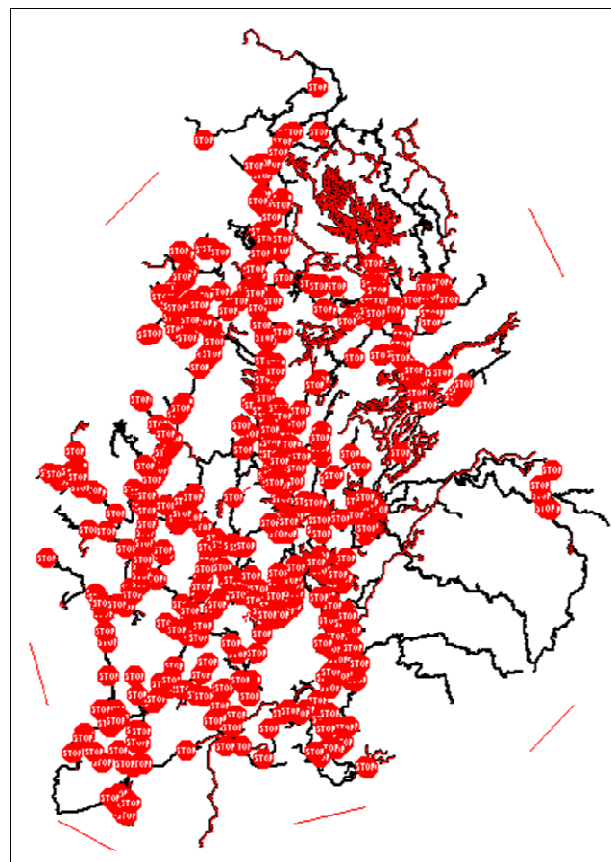


First, TIMS Staff reviewed the normal stops that were already located on the identified State Maintained Road as these stops could continue to be serviced during bad weather.

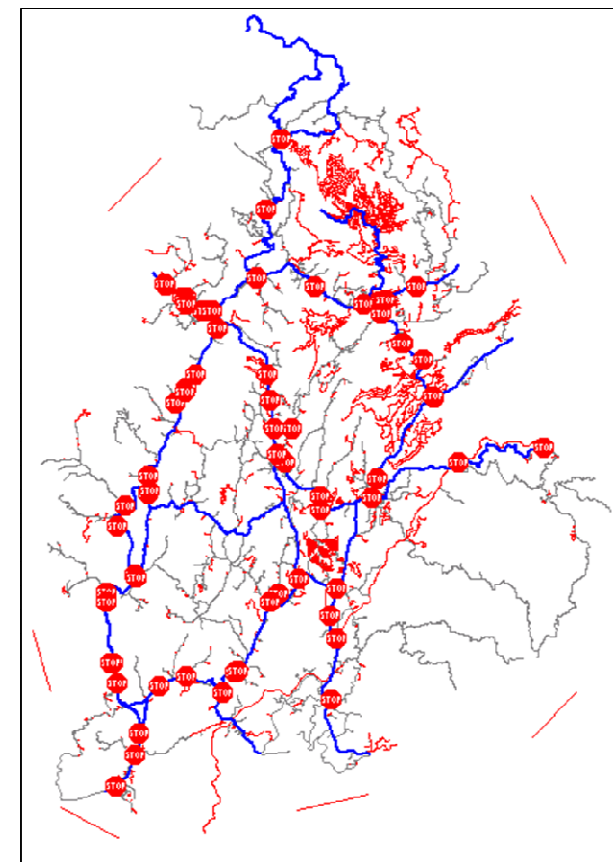
TIMS Staff then identified the normal stops on roads that will not be serviced during bad weather.

For stops in these areas, TIMS Staff created Community Stops at safe locations nearest the student. Many of these community stops are places of business, churches or other areas previously approved as a designated pick up or drop off point.

After this process, the estimated number of bus stops dropped from 1,100 during normal weather, to just 101 Stops under the current Snow Plan.



1,100 Stops  
on Daily Routes



101 Stops  
On Snow Routes



## Transportation Operation Differences

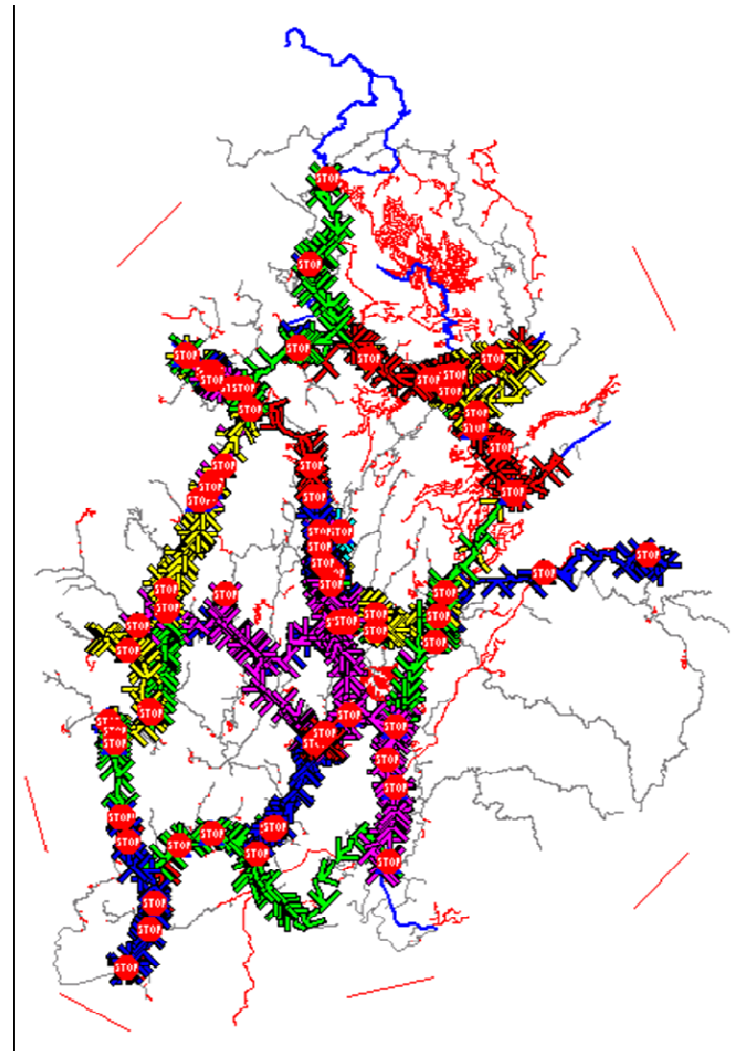
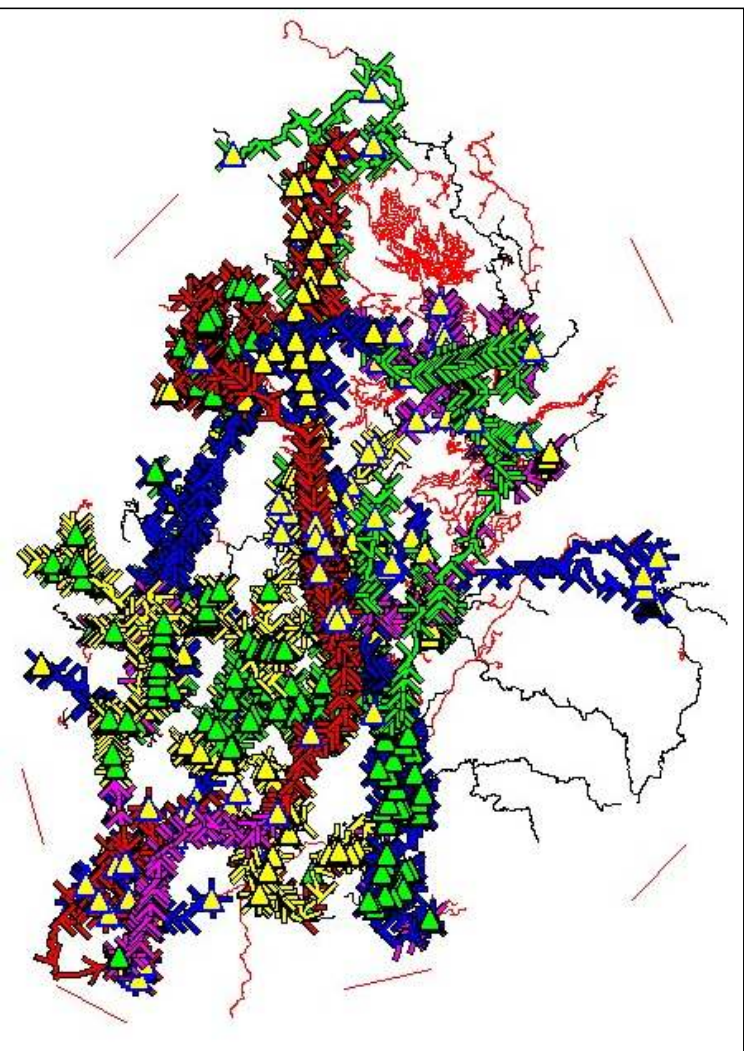
### Regular Routes vs. Snow Routes

#### Regular Routes:

- 29 Buses
- 1,100 Stops
- 2,800 Miles
- 1,400 Riders

#### Snow Routes:

- 29 Buses
- 101 Stops
- 1,250 Miles
- 1,400 Riders



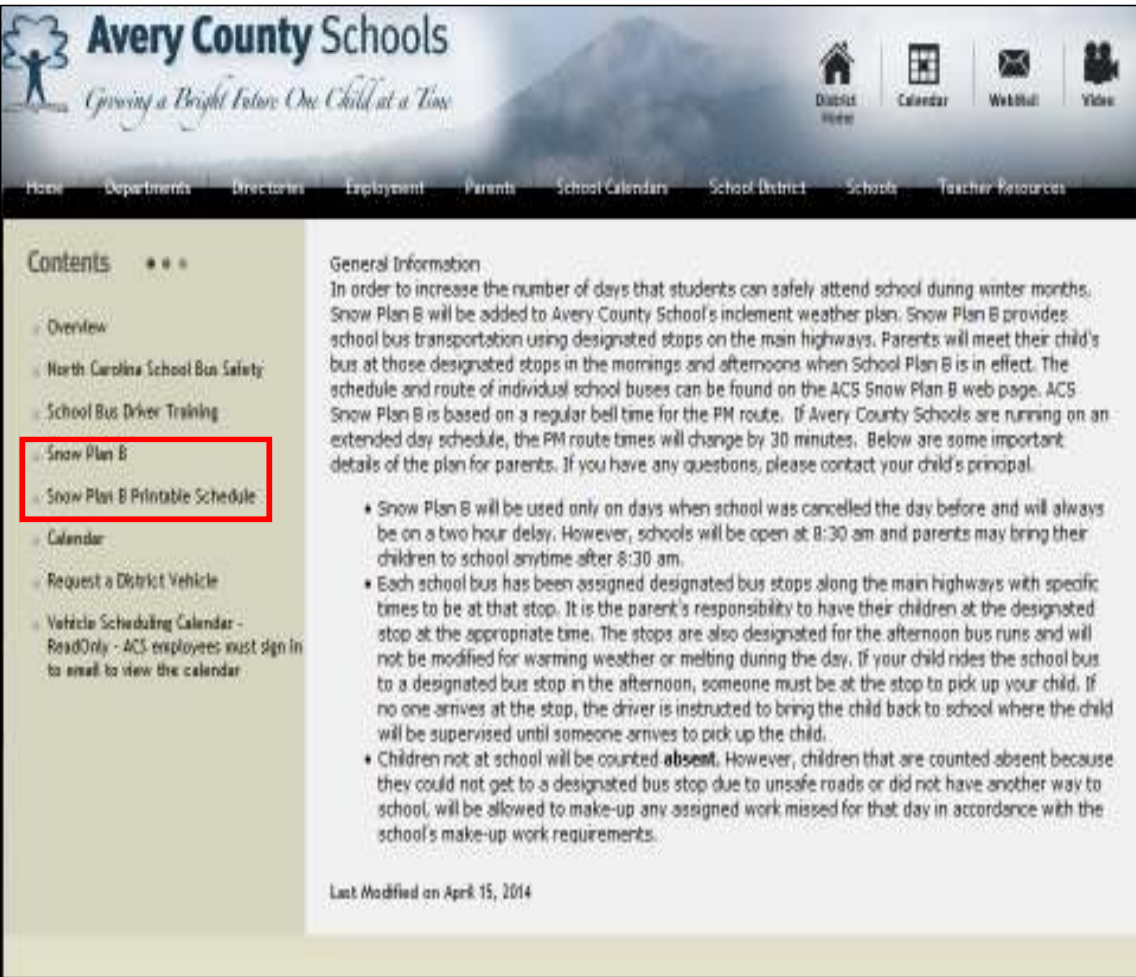
After completing the redesign, Avery County Schools posted a link on their website to notify parents about the implementation of Snow Plan B and when these routes would be used throughout the school year.

Snow Plan B is used when school was cancelled the day before and is on a Two-Hour delay for the current school day.

Afternoon stop locations are not modified for warming weather or melting during the day, so if Snow Plan B is utilized in the morning, the same Routes will be performed in the evening.

A parent or guardian must be present at the designated stop location, otherwise the driver is instructed to return the child to school, where they will be supervised until someone arrives to pick them up.

In addition to this information, the Designated Stops and Times for Snow Plan B are also posted on the website as a reference for parents.



The screenshot shows the Avery County Schools website. The header includes the school logo and tagline "Giving a Bright Future One Child at a Time". Navigation icons for District Home, Calendar, WebMail, and Video are visible. A menu bar contains links for Home, Departments, Directors, Employment, Parents, School Calendars, School District, Schools, and Teacher Resources. The main content area features a "Contents" sidebar with a red box highlighting "Snow Plan B" and "Snow Plan B Printable Schedule". The main text area is titled "General Information" and provides details about the Snow Plan B implementation, including a two-hour delay and designated bus stops. A "Last Modified" date of April 15, 2014, is shown at the bottom.

**Avery County Schools**  
*Giving a Bright Future One Child at a Time*

Home Departments Directors Employment Parents School Calendars School District Schools Teacher Resources

Contents

- Overview
- North Carolina School Bus Safety
- School Bus Driver Training
- Snow Plan B**
- Snow Plan B Printable Schedule**
- Calendar
- Request a District Vehicle
- Vehicle Scheduling Calendar - ReadOnly - ACS employees must sign in to email to view the calendar

**General Information**

In order to increase the number of days that students can safely attend school during winter months, Snow Plan B will be added to Avery County School's inclement weather plan. Snow Plan B provides school bus transportation using designated stops on the main highways. Parents will meet their child's bus at those designated stops in the mornings and afternoons when School Plan B is in effect. The schedule and route of individual school buses can be found on the ACS Snow Plan B web page. ACS Snow Plan B is based on a regular bell time for the PM route. If Avery County Schools are running on an extended day schedule, the PM route times will change by 30 minutes. Below are some important details of the plan for parents. If you have any questions, please contact your child's principal.

- Snow Plan B will be used only on days when school was cancelled the day before and will always be on a two hour delay. However, schools will be open at 8:30 am and parents may bring their children to school anytime after 8:30 am.
- Each school bus has been assigned designated bus stops along the main highways with specific times to be at that stop. It is the parent's responsibility to have their children at the designated stop at the appropriate time. The stops are also designated for the afternoon bus runs and will not be modified for warming weather or melting during the day. If your child rides the school bus to a designated bus stop in the afternoon, someone must be at the stop to pick up your child. If no one arrives at the stop, the driver is instructed to bring the child back to school where the child will be supervised until someone arrives to pick up the child.
- Children not at school will be counted **absent**. However, children that are counted absent because they could not get to a designated bus stop due to unsafe roads or did not have another way to school, will be allowed to make-up any assigned work missed for that day in accordance with the school's make-up work requirements.

Last Modified on April 15, 2014

Snow Plan B  
**Add 20 minutes for extended days!**  
 Snow Plan B Bus Routes and Schedules

Avery High School/Avery Middle School/Newland Elem.

Bus	Location	AM arrival	AM departure	PM arrival	PM departure
128	Sam Brewer Rd	9:00	9:05	3:27	3:32
128	Newland Sq Presbyterian	9:20	9:25	3:17	3:22
Bus	Location	AM arrival	AM departure	PM arrival	PM departure
130	J's Market	8:59	9:04	4:07	4:12
130	Sunrise Market	9:05	9:10	3:57	4:02
130	Old Elk Park Supermkt	9:11	9:16	3:50	3:55
130	Jack Hicks Trucking	9:18	9:23	3:43	3:48
130	Banner Cabinet	9:31	9:36	3:25	3:30
130	Dr. Lindsey's Office	n/a	n/a	2:45	2:50
Bus	Location	AM arrival	AM departure	PM arrival	PM departure
132	Elk Valley Church	8:50	8:55	4:07	4:12
132	Store at Heaton	9:00	9:05	3:57	4:02
132	Heaton Christian Church	9:09	9:14	3:50	3:55
132	Times Square Diner	9:28	9:33	3:29	3:34
132	Quik Jack's Elk Park Hwy	9:41	9:46	3:17	3:22
Bus	Location	AM arrival	AM departure	PM arrival	PM departure
120	Plumtree Post Office	8:50	8:55	4:07	4:12
120	Russell's Antiques	9:09	9:14	3:50	3:55
Bus	Location	AM arrival	AM departure	PM arrival	PM departure
105	Frank Presbyterian Ch.	8:29	8:34	4:35	4:40
105	Old Minneapolis School	8:49	8:54	4:22	4:27
105	Behview Church	8:59	9:04	4:04	4:09
105	CMS/FT Elem.	9:12	9:17	3:48	3:53
105	Quik Jacks Elk Park Hwy	9:25	9:30	3:36	3:41
105	Ingles	9:33	9:38	3:26	3:31
105	Scotchman	9:41	9:46	3:17	3:22

Snow Plan B  
**Add 20 minutes for extended days!**  
 Snow Plan B Bus Routes and Schedules

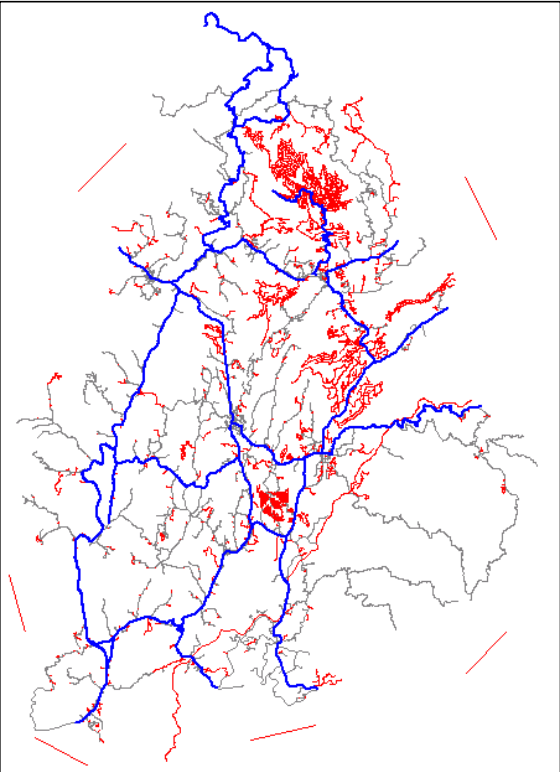
Bus	Location	AM arrival	AM departure	PM arrival	PM departure
116	Linville VFD	9:25	9:30	3:34	3:39
116	Linville Mart	9:35	9:40	3:25	3:30
116	Montezuma Post Office	9:44	9:49	3:15	3:20
Bus	Location	AM arrival	AM departure	PM arrival	PM departure
1830	End of Edgemont Rd	8:55	9:05	3:55	4:00
1830	Turnaround on 221	9:10	9:15	4:10	4:15
1830	Sugar Mtn #2/Newland Hwy	9:45	9:50	3:20	3:25
Bus	Location	AM arrival	AM departure	PM arrival	PM departure
119	Chevron St-Jonas Ridge	9:21	9:26	3:43	3:48
119	Christa's Corner	9:32	9:37	3:30	3:35
119	Laurel Country Store	9:40	9:45	3:20	3:25
Bus	Location	AM arrival	AM departure	PM arrival	PM departure
112	Mt Calvary Church	8:55	9:00	4:08	4:13
112	Old Banner Elk School	9:12	9:17	3:55	4:00
112	Lowe's Hardware	9:20	9:25	3:42	3:47
112	Lowe's Foods	9:32	9:37	3:27	3:32
Bus	Location	AM arrival	AM departure	PM arrival	PM departure
108	Sunrise Shopping Ctr	8:52	8:57	4:04	4:09
108	Old Banner Elk School	9:07	9:12	3:55	4:00
108	...	...	...	...	...



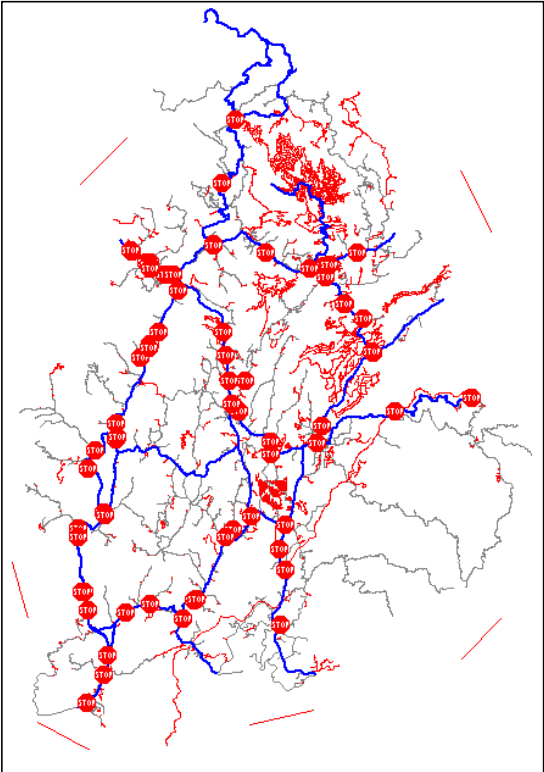
# Summary of Steps:

## Developing Snow Routes In Avery County

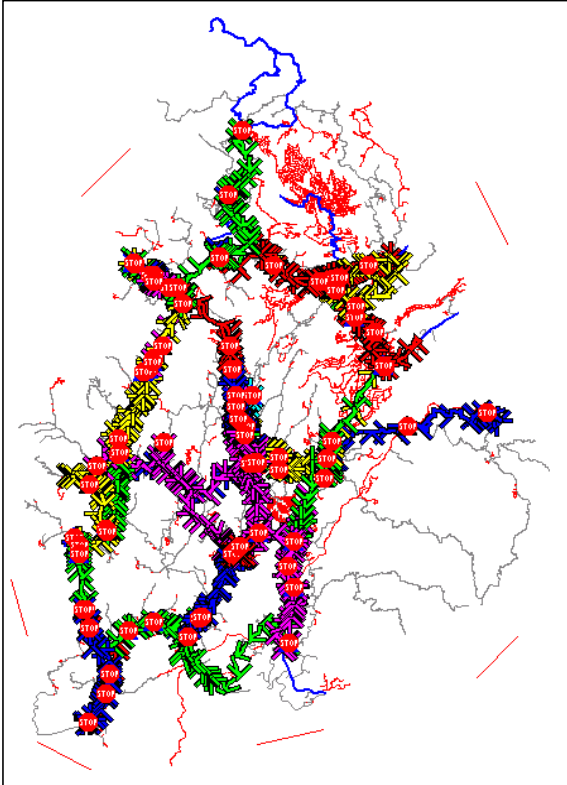
Step 1: Identify and Code streets in MARIS



Step 2: Create Safe Stops on these streets



Step 3: Create Bus Runs and Routes based on the Safe Stops







TRANSPORTATION INFORMATION MANAGEMENT SYSTEM

ncbussafety.org

North Carolina Department of Public Instruction-Raleigh North Carolina

# TIMS Case Studies

**Any  
Questions?**

*Developing Snow Routes  
In  
Avery County*



**Avery County Schools**

*Growing a Bright Future One Child at a Time*

