The Transportation Information Management System

A Program of Computer-Assisted School Bus Routing and Scheduling
Generating Transportation Efficiencies in North Carolina's Public Schools

Transportation Efficiency Study, Charlotte-Mecklenburg Schools August, 2009
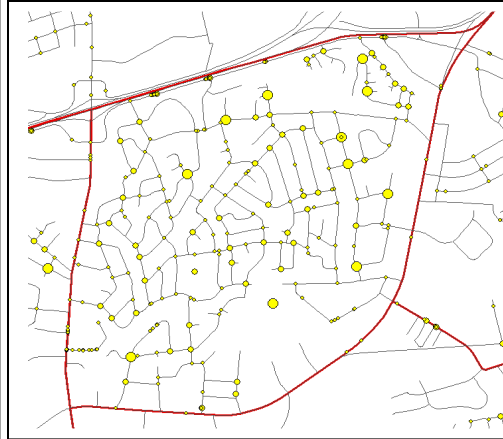
In July of 2008, CMS transportation staff partnered with UNCC TIMS staff to review current neighborhood bus stop placement and develop a template using landmarks in TIMS creating common neighborhood bus stops across the district in an effort to reduce number of stops, buses and miles.

Using ArcGIS and TIMS data, maps were created using a Charlotte Chamber of Commerce study on Quality of Life. The city is divided up into 200 neighborhoods and contains other information useful in determining common bus stop placement within the neighborhoods. The maps had current bus stops and boundary information where feasible; CMS staff used these maps as they visited each of the neighborhoods and recorded common bus stop locations. These maps were used by UNCC TIMS staff to create landmarks in TIMS, creating a template of stops to be used by any school serving the neighborhood.
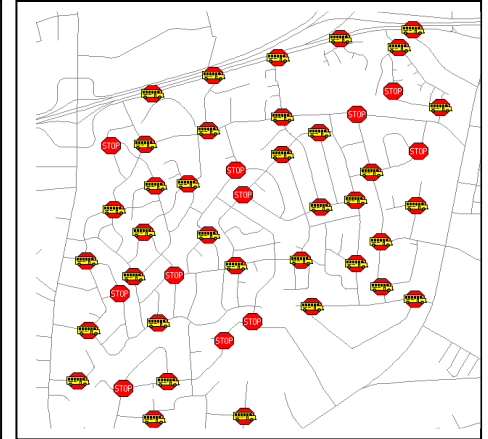
Two layers of landmark locations were created to address the difference in walking distances for elementary students (.20 and appear as a stop sign) and secondary students (.40 and appear as a school bus).

Bus stops and runs were created over the summer by CMS transportation staff using the template and route optimization was used to pair the runs together.

Preliminary results show students walking an average of .05 farther than last year to their respective neighborhood stop for the opening of school this fall. The district has been able to trim around 100 buses from their fleet and almost 11,000 miles a day. The chart shows a before and after snapshot of projected savings in miles and walk distances to stops for 2008 and 2009.
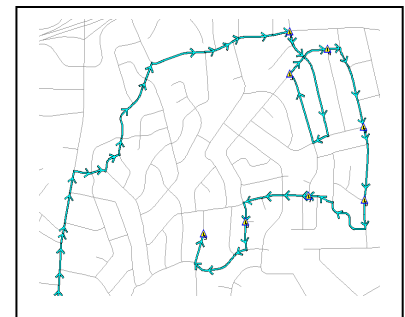
Map of bus stops before consolidation

Map showing landmarks after consolidation

Bus run before changes

Bus run after changes

Comparison of Opening Day of School Assigned TIMS Data			
	2008-09	2009-10*	Estimated Change
# Students Assigned to a Bus	112,000	111,000	(1,000)
# Total Bus Stops	37,000	26,000	(11,000)
# Total Bus Runs	5,652	5,292	(360)
# Total Routes or Buses	1,255	1,155	(100)
# Daily Miles	140,000	129,000	(11,000)
Average Walk Distance to Bus Stop (miles)	0.07	0.12	0.05
*2009-10 Data are projections and subject to change as the year			

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